

# The predictive validity of brand-related autobiographical memories on brand commitment

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# The Predictive Validity of Brand-Related Autobiographical Memories on Brand Commitment

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# THE PREDICTIVE VALIDITY OF BRAND-RELATED AUTOBIOGRAPHICAL MEMORY ON BRAND COMMITMENT

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Consumer decisions are largely influenced by prior experiences via memory. Consumer research is limited in its consideration of the separate memory system conceptualisations dominant in psychology, and rather has primarily focused on semantic memory (SM). As Autobiographical Memory (AM) may equally affect one's brand consumption decisions, it is critical to integrate AM into brand-related memory studies for a complete understanding of the consumer learning and decision-making process. The study conceptualises affective, self-relevant brand episodes as Brand-Related Autobiographical Memory (BRAM), and storage of abstract brand knowledge as Brand-Related Semantic Memory (BRSM). The conceptual review identified hypothesised relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

Within a positivist paradigm, the study employed methodological triangulation with qualitative interviews, functional magnetic resonanace imaging (fMRI) experiment and a survey to collect data. Findings suggest that brand memories are stored in AM and SM, and brand memories that are in AM are self-relevant and emotion-laden. The construct of Specificity explains the self-brand congruence relationship while BRAM (Vividness and Affect) influence brand commitment. No relationship was discovered between BRSM, self-brand congruence and brand commitment. This is of particular significance as dominant consumer research focuses on semantic memory.

The research contributes to marketing theory by: 1). identifying the importance of multiple memory systems in understanding consumers' decision-making; 2). exploring how BRAM contributes towards emotional decision-making models; 3). identifying the importance of BRAM in self-brand congruence theory and brand commitment decisions; 4). demonstrating the use of nuroimaging (fMRI) methods to study consumer memories and 5). introducing the BRAM scale as a complementary measure to recall and recognition tests.

**Keywords:** brand-related autobiographical memory, brand-related semantic memory, self-brand congruence, affective brand commitment

Dedicated to my ever loving Mother and Father……..

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For any errors or inadequacies that may remain in this work, of course, the responsibility is entirely my own.

Coventry, March 2012

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# Chapter 1 : INTRODUCTION

## 1.0 Introduction

Understanding psychological factors and processes underlying consumer behaviour is of significant importance in predicting consumers' potential consumption decisions and behaviour. Memory plays a critical role in influencing consumers' product and brand choice decisions. Memory research across a range of disciplines identifies different systems of memory with differential influences on human behaviour including consumption decisions (Mantonakis, Whittlesea and Yoon 2008; Alea and Bluck 2003; Squire and Zola 1996; Tulving 1995). Seminal research identifies two predominant long-term memory systems (semantic and autobiographical). Consumer research has primarily focused on semantic brand memory and research on the episodic nature of autobiographical memories on consumer decisions is limited despite the strong influence of autobiographical memories on human behaviour (Gluck et al. 2005; Baumgartner, Sujan and Bettman 1992; Neisser 1988). This thesis addresses this important gap in the literature by investigating the differential influence of memory systems, with reference to the semantic and autobiographical brand-related memories, and their effect on self-brand congruence and affective brand commitment.

This chapter: 1) develops the rationale for the research initiative; 2) presents the research aims and objectives; and, 3) outlines the structure of the thesis.

## 1.1 Research initiative

Effects on memory and comprehension have long been subjects of interest to researchers in a variety of fields. With the development of schema theory (Anderson 1977), the effects of prior knowledge in information processing have been dominant in the educational, cognitive, social psychology areas and in consumer behaviour research. It is important to investigate how consumption-related information is processed by consumers in their buying decisions. The rationale for the research is articulated in the following three sections.

### 1.1.1 Influence of memory on consumer decisions

The affirmation, 'we are what we remember' validates the fact that humans' behaviour is directed according to what we remember (Albert 1977). Mantonakis, Whittlesea and Yoon (2008) contend that memory controls all our human behaviour including speech, conceptual knowledge, skilled activities, social interactions and consumer preferences. In general, memory is defined as an active constructive process where information is acquired, stored, and then available for retrieval and use in decision-making (Braun 1999).

The influential seminal work by Lynch and Srull (1982) classified consumer decisions in three main ways: stimuli-based, memory-based and mixed-based. When all information is available at the time of making judgements, they are stimuli- based (e.g. a consumer is given three brands, Ford, Peugeot and Volkswagen with a brand attribute matrix corresponding to values for price, mileage and rate of repair, and asked to make a decision). On the other hand, when information is stored in the mind and retrieved for the use of decision-making, they are memory-based decisions. These decisions are based on prior

experience with a product, knowledge of the choices of other people, and other factors where information is not directly present at the time of judgement (e.g. consumer making up a grocery list while at work). In mixed decisions, there is a middle situation where consumers take decisions based on the direct available information at the time of purchase as well as that influenced by prior experiences (e.g. a consumer may visit Wilkinson, Tesco and IKEA to buy a kitchen appliance and will buy from IKEA). Lynch and Srull (1982) reflected on the importance of memory-based choices over stimulus-based consumer decisions due to the significant persuasive effect of prior experiences on human behaviour. Thus, the issue of memory-based decisions is of central concern to consumer psychologists.

Many studies in consumer research had investigated the influence of consumer memory on brand choice. When choice is memory-based, brand cues activate brands in memory, shape brand retrieval, and influence brand choice (Nedungadi 1990). In implicit memory tests, familiar brands kept in the memory were primed for the final brand choice (Coates, Butler and Berry 2004; Butler and Berry 2001; Sanyal 1992). Biehal and Chakravarti (1986) discovered the information in consumer memory was more influential on brand choice than external information while Braun-Latour, Grinley and Loftus (2006) posited consumers' future purchase decisions are based on their memory. Therefore, consumer memory fundamentally influences brand decisions. Through a reconstructive memory process, Braun (1999) posited that advertising information affects how and what consumers remember and over time, this post experience advertising information becomes incorporated into the brand schema and influences future product decisions. Yet, Baumgartner (2008) through an

extensive search of key marketing journals following a meta-analysis procedure discovered that limited attention has been given to the topic of memory in consumer research in comparison to other psychological areas relevant to consumer behaviour. Holden and Lutz (1992) also contended that consumer memory researchers have not considered the importance of brand retrieval from memory from an economic or brand management perspective. Thus, not only is memory research limited in a consumer-context, it is a critical psychological process that drives behaviour and as such, it is a theoretically and managerially important area to investigate.

### 1.1.2 Interdisciplinary research on memory: Autobiographical Memory (AM) and Semantic Memory (SM)

Memory is a complex process and the conceptualisation of different memory systems and how brands are stored within them will support our understanding of consumption behaviour. Evolving behavioural, psychological and neuroscientific work classifies human memories into three main memory systems: sensory memories, short-term memories and long-term memories. Sensory memory permits storage of information we receive from our senses, short-term memory stores information for limited time duration, and long-term memory allows us to retain information for a long period of time (Avery et al. 2010; Baddeley 2007; Solomon et al. 2006). Long-term memory systems are further classified as declarative (accessible to multiple response systems and supports conscious recollections) and non-declarative memories (more encapsulated and the individual has less access to or awareness of memory content) (Kerckhove 2011; Baddeley, Eysenck and Anderson 2009; Squire and Zola 1996; Tulving 1983). A further declarative (conscious) memory dichotomy

distinguishes between semantic and episodic memories (Mantonakis, Whittlesea and Yoon 2008; Baddeley, Eysenck and Anderson 2009; Squire and Zola 1996; Tulving 1983), which has particular relevance to consumer behaviour due the nature and content of information stored and recollected in these two memory systems in influencing consumption- related decision-making.

Tulving (1983) distinguished between semantic memory and episodic memory, where episodic memory refers to autobiographical events. Semantic memory refers to context- independent general knowledge of the world that enables us recall names of the world's great capitals, social customs, functions of things, colour and odour (Baddeley, Eysenck and Anderson 2009; Martin and Chao 2001: 194). Semantic memory also includes our memory of rules and concepts, which lets us construct a mental representation of the world without any immediate perceptions (Mantonakis, Whittlesea and Yoon 2008; Welzer and Markowitsch 2005).

In comparison, autobiographical memories preserve details of particular experiences and support remembering tasks (Tulving 1983, 1985). The primary distinction is, therefore, between 'remembering', which depends on event-specific information, and 'knowing', which depends on the abstract summary of prior experiences (Mantonakis, Whittlesea and Yoon 2008: 83). Importantly autobiographical events are traced back in time, specific to their original context, time, and place (Tulving and Markowitsch 1998) whereas such information is not available with semantic memories.

Studies considering autobiographical memories and semantic memories in areas such as psychology, medicine, and sociology show distinct differences among these two memory systems (discussed in detail in Chapter 2, Section 2.3). The differences include storing, processing, and retrieval of information in memories resulting in different behavioural outcomes (Nessler et al. 2006; Welzer and Markowitz 2005; Pernot-Marino, Danion and Hedelin 2004; Addis and Tippett 2004; Thompson-Schill 2002).

### 1.1.3 Importance of Autobiographical Memories (AM) in consumer behaviour

Previous consumer memory studies have focused more on semantic memories (Noel 2006; Warlop, Ratneshwar and Osselaer 2005; Shapiro and Spence 2002; Nordhielm 2002) than the episodic nature of autobiographical memories (Braun-Latour and Zinkhan 2007; Sujan, Bettman and Baumgartner 1993). However, autobiographical memories are defined as 'specific, personal, long lasting, and (usually) of significance to the self-system or as forming one's personal life history' (Nelson 1993: 8) and evidenced a profound impact on human behaviour (Conway, Wang and Hanyu 2005; Addis and Tippett 2004) due to the nature and content associated with autobiographical memories.

Studies on sociology and psychology identify distinctive qualities that perform different functions in processing information in autobiographical memories (AM) in comparison to semantic memories (SM). Robinson and Swanson (1990) identified three main qualities associated with AM: feeling belongingness, re-experiencing the original episode through vividness and memory perspective. As Gluck et al. (2005) explain directive (planning for present and future

behaviours), self (self–continuity) and communicative (social bonding) are the three main functions of AM that influence human behaviour.

Importantly, the directive function of AM helps to direct future behaviour in solving problems, developing attitudes and opinions though the lessons from past AM (Bluck and Gluck 2004; Pratt et al. 1999; McCabe, Capron and Peterson 1991). Specifically when products and brands are more associated with AM, consumers' behaviour and future brand decisions may be guided by their feelings and by re-experiencing the original episodes through vividness. The communicative function of AM is also important to understand consumers in developing, maintaining, and nurturing social bonds (Pillemer 1998; Nelson 1993), because very often, prior consumption experiences of brands and products can be considered as symbols of interaction, that facilitate one's dynamic conversations and social interaction.

These qualities and functions of AM have relevance to decision-making models in comparison to SM, in particular to brand decisions and brand relationship building: brand-related prior experiences can be stored in AM with the above mentioned qualities and, therefore, consumer decision making may be influenced differently by the information stored and retrieved from AM compared to the abstract knowledge stored and retrieved from SM.

As Brakus, Bernd and Zarantonello (2009) posited, brand experiences vary in strength and intensity, and long-lasting brand experiences influence consumer satisfaction and loyalty (Oliver 1997; Reichheld 1996). Brand experiences can be formulated through a range of drivers such as physical, functional, and

emotional brand attributes (Kotler and Keller 2006; Plummer 2000; Biel 1992); brand personality characteristics (Aaker, 1997, 1999); nostalgic experiences (Goulding 1999; Sierra and McQuitty 2007) and brand heritage (Simms and Trott 2006; Batra and Homer 2004; Plummer 2000; Aaker 1996).

These brand associations through prior experiences can be stored in consumer memory in two ways as per the conceptualisation of AM and SM. Consumers may only 'know' about the brand and store factual information about brand attributes, benefits and characteristics through their brand experiences, conceptualised as Brand-Related Semantic Memories (BRSM). In parallel, brand-related personal experiences such as nostalgic experiences may be stored as episodes in AM with contextual and affective details, which is conceptualised as Brand-Related Autobiographical Memories (BRAM). Thus, an investigation of BRAM may be particularly relevant and timely in consumer research. As explained in Section 1.1.1 above, despite the importance of memory-based decisions, limited attention has been given to memory studies in consumer psychology research including AM (Baumgartner 2008; Holden and Lutz 1992). This study, through a multi-disciplinary approach, identifies the importance of multiple memory systems in a consumer context, and investigates AM and SM to determine whether and how brand-related autobiographical and semantic memories influence one's brand-related decision-making.

The study of BRAM and BRSM runs parallel to a consideration of rational vs. emotional decision-making paradigms. As Shiv and Fedorikhin (1999) state, consumer research has been predominantly cognitive in nature, and affect has received little attention. From a memory perspective, consumer decisions are

conceptualised as deriving from recalling BRSM, with cognitive–based conceptual knowledge, whereas BRAM may deal with emotional dimensions and self-relevance in decision-making. The predominance of BRSM studies outlines a need to investigate the episodic and affect- associated BRAM so that we can extend our psychological understanding of memory systems into a consumer decision context incorporating both rational and emotional decision- making models.

Importantly, there have been continuous calls for research on emotional brand relationships (Marketing Science Institute 2008; Reed 2002;Fournier 1998) due to the impact of affect in the decision making process: Consumers often pay less attention to semantic information such as product attributes and other product evaluation attributes when AM are retrieved (Baumgartner, Sujan and Bettman 1992); Shiv and Fedorikhin (1999) suggest that when processing resources are limited, affective reactions have a greater impact on choice compared to cognitions; In print advertising, Batra and Stayman (1990) found more heuristic processing, and less elaboration and message evaluation in a positive mood; Further, the role of affect in decision-making has been investigated by Hoch and Loewenstein (1991), Kahn and Isen (1993), Luce, Bettman, and Payne (1997) and supported by neuroscientific evidence (Bechara et al. 1998). AM are essentially affect-laden memories and may have implications towards emotional decisions. Investigation into affect-laden BRAM in the decision making process, therefore, is particularly timely.

Self-concept is a key psychological construct deemed to be central to behaviour within a consumption context (Sirgy et al. 2008; Kressmann et al. 2006; Ekinci

and Riley 2003; Jamal and Goode 2001). AM are uniquely and essentially self-concept-related. This self-function supports and promotes continuity and development of the self (Habermas and Bluck 2000; Barclay 1996; Neisser 1988; McAdams 1985) in emotion regulation (Pasupathi 2003), self–concept preservation and enhancement (Wilson and Ross 2003). This self-related function of AM may be critically important in consumption decisions and in particular in the theory of self-brand congruence because consumers prefer and are loyal towards brands that match with their self-image.

To date, the relationship between BRAM, BRSM, self-brand congruence and decision-making (i.e. brand commitment) has not been demonstrated in a consumer context. The present study will address this gap in the literature by incorporating multiple memory systems into the conceptualisation of brand memory, providing insights towards rational and emotional decision-making paradigms and the development of emotional brand relationships.

## 1.2 Research objectives

The two main research objectives are:

1. To conceptualise whether and how brands are stored and retrieved from autobiographical and semantic memory, and whether the psychological and physiological differentiation of these brand memory systems can be validated.
2. To conceptualise and validate the nomological network of relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

## 1.3 Propositions and hypotheses

After reviewing the multi-disciplinary literature relating to the study, and in order to achieve the objectives outlined in Section 1.2, the following propositions and hypotheses were developed.

Propositions

P1 Brand-related memories will be predominantly represented in either AM or SM.

P2 Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM.

P3 Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM.

P4 Specificity, vividness and affect are reflective of BRAM.

Hypotheses

H1 BRAM positively affects BRSM.

H2 Variance in self-brand congruence is explained more by BRAM than BRSM.

H3a BRAM positively affects brand commitment.

H3b Variance in affective brand commitment is explained more by BRAM than BRSM.

H4 Self-brand congruence positively influences affective brand commitment.

## 1.4 Research approach

This study is conducted within the scientific paradigm, with a positivist approach following a hypothetico-deductive methodology. After the conceptualisation of BRAM and BRSM through a multi-disciplinary literature review and an

exploratory qualitative study (Study 1), relevant propositions and hypotheses were developed. In order to increase the validity, methodological triangulation was employed in the study. Across-method triangulation with three data collection strategies; qualitative interviews, an fMRI experiment and a survey (including expert judgement panel and pilot survey) was employed. In total, the multi-method sample included 424 participants (22 qualitative interviews; 18 fMRI experiments; 6 expert judges; 75 pilot survey questionnaires and 303 main survey respondents). The sample comprised British citizens or respondents living in the UK for more than 10 years.

In the data analysis process, qualitative data was audio recorded, transcribed and coded using NVIVO 8.0. Meaning categorisation and condensation analysis were used to analyse qualitative data. FMRI brain images obtained through MRI scanning was analysed using Statistical Parametric Mapping (SPM 8) running on Matlab R2011a. Survey data was entered into SPSS 17.0 for data purification and was followed by data validation through confirmatory factor analysis using LISREL 8.80. Finally, survey-related propositions and hypotheses were tested through structural equation analysis. Table 1-1 (p. 13) summarises an overview of the methodology used in the study.

Table 1-1: Overview of data collection and analysis strategy

| | Study | Sample size | Analysis strategy | | Software Used | Propositions Hypothesis |
|---|---|---|---|---|---|---|
| 1. | Qualitative Interviews (Section 4.3) | 22 | Meaning categorisation and condensation | | Nvivo 8.0 | P1, P4 H3a, H3b |
| 2. | fMRI Experiment (Section 4.4) | 18 | Pre-processing, First Level Analysis, Second Level Analysis | | Matlab R2011a SPM8 | P1, P2, P3 H3a, H3b |
| 3. | Expert Judgement Panel (Section 4.5.2) | 6 | Measure Development1: | Judges agreement percentage | MS Excel 2007 | N/A |
| 4. | Pilot Study (Section 4.5.4) | 75 | Measure Development: | Inter-item correlation analysis | SPSS 17.0 | N/A |
| 5. | Main Survey (Section 4.5.) | 303 | Measure Purification : (n=153) | Inter-item correlation analysis Total-item correlation analysis Exploratory Factor analysis | SPSS 17.0 | P4 |
| | | | Measure Validation: (n=150) | Confirmatory Factor Analysis Reliability and validity assessment | LISREL 8.80 | H1, H2, H3a, H3b, H4 |
| | | | Testing of Propositions: (n=303) | Second order confirmatory factor analysis | | |
| | | | Testing of Hypotheses: (n=303) | Structural Equation Modelling | | |

## 1.5 Thesis structure

To achieve the research objectives detailed in Section 1.2, each chapter of this thesis is structured around the set of research propositions and hypotheses, which build upon each other to meet the research objectives. Table 1-2 (p.15) shows the detailed structure of the thesis. In summary, Chapter 1 sets the context for the research, explains its rational, importance and provides an overview. Chapter 2 conceptualises BRAM and BRSM through a multidisciplinary critical literature analysis. Chapter 3 develops a set of propositions about how BRAM are perceived in consumers' minds, and formulates hypothesised relationships between BRAM, BRSM, self-brand congruence and affective brand commitment. Chapter 4 presents the research design and methodology used in data collection and analysis. Chapter 5 reports reliability and validity measures of all three empirical studies while Chapter 6 reports the results of data analysis for each proposition and hypothesis. Then Chapter 7 discusses the results reported and Chapter 8 concludes the thesis reflecting on its main contributions.

Table 1-2: Thesis structure

| **Chapter No. and Title** | | **Chapter Objective** | **Chapter Summary** |
|---|---|---|---|
| 1 | Introduction | 1. To demonstrate the rationale (research initiative) of the study.<br>2. To present aim and objectives of the study.<br>3. To elaborate the structure of the Thesis. | The chapter introduces the research by presenting the rationale and importance of the study (brand-related memories by distinguishing autobiographical versus semantic), research objectives, study propositions/ hypotheses, research approach and thesis structure. |
| 2 | Theoretical framework: Conceptualising Brand-Related Autobiographical Memories (BRAM) and Brand-Related Semantic Memories (BRSM) | 1. To conceptualise the importance of multiple memory systems in consumer behaviour.<br>2. To conceptualise and define Brand-Related Autobiographical Memories (BRAM) and Brand-Related Semantic Memories (BRSM). | This chapter details multiple memory systems and the importance of AM in consumer research. Then a conceptualisation of BRAM and BRSM is derived through various brand image drivers. |
| 3 | Conceptual model and hypotheses development: Nomological network of relationship between BRAM, BRSM, self-brand congruence and affective brand commitment. | 1. To conceptualise how brand-related memories are stored in memory.<br>2. To investigate relationship between BRAM, BRSM, self-brand congruence and affective commitment. | Four propositions were developed by:<br>Distinguishing brand-associated AM and SM<br>Three attributes for BRAM were identified; specificity, vividness and affect<br>Five hypotheses were developed with:<br>BRAM attributes and BRSM<br>BRAM, BRSM and self-brand congruence<br>BRAM, BRSM and affective brand commitment |

| | | | |
|---|---|---|---|
| 4 | Methodology | 1. To reflect on the research approach adopted in the study.<br>2. To provide an overview and rational for three empirical studies undertaken in the study.<br>3. To present and justify the data analysis strategy and consider limitations of each data collection strategy. | This chapter presents the research approach taken for this investigation.<br>Details of the three main empirical studies (qualitative interviews, fMRI experiment and main survey) are discussed.<br>Data analysis techniques of all empirical studies are discussed systematically in detail.<br>Limitations of each data collected strategy are highlighted. |
| 5 | Multi-method Reliability and Validation | To present the reliability and validity measures of multi-methods used in the study;<br>1. Qualitative Interviews<br>2. fMRI Experiment<br>3. Survey study | The chapter starts by discussing various Trustworthy measures taken to improve reliability and validity of qualitative interviews.<br>fMRI experiments follow the standard procedure by pre-processing images (slice-timing correction, realignment, co registration and spatial smoothing) before implementing statistical analysis.<br>Reliability and validity of survey data are measured through EFA and CFA before the statistical analysis. Here the newly developed measure (BRAM) is purified and validated while other adopted measures (BRSM, SBC, AFBC) are validated before propositions and hypotheses are tested. |

| | | | |
|---|---|---|---|
| 6 | Results<br>Test of propositions and hypotheses: The influence of BRAM and BRSM towards self-brand congruence and affective brand commitment. | 1. To test the existence of a second-order structure for BRAM.<br>2. To test all propositions developed in the study.<br>3. To present model testing results.<br>4. To test all hypotheses developed through structural equation modelling. | This chapter focuses on testing relevant propositions and hypotheses. Initially the second-order structure model is established for BRAM. Relevant propositions are tested by triangulating results of three empirical studies.<br>Hypotheses are mainly investigated through survey data by testing the path coefficients of structural equation modelling.<br>The results support the all four propositions and two main hypotheses (2 and 3) while two hypotheses (1 and 4) were not supported by data. |
| 7 | Discussion | 1. To discuss reported results against relevant proposition and hypotheses | Primarily a difference can be made between BRAM and BRSM. BRAM are specific, vivid and affect -laden memories in comparison to abstract brand information stored in BRSM.<br>Specificity influences towards SBC, and BRAM (Affect and Vividness) influences AFBC more than BRSM. |
| 8 | Conclusion | 1. To identify main contributions of the study.<br>2. To reflect on limitations and identify further research directions | Five theoretical, one methodological and three managerial contributions are identified and presented.<br>Six limitations are identified, reviewed and a number of future research areas are identified for future further investigation. |

## 1.6 Key definitions in the study

Table 1-3 details the key constructs and definitions used throughout the study with their abbreviations.

Table 1-3: Key definitions in the study

| Abbreviation | Construct | Definition |
|---|---|---|
| AM | Autobiographical Memory | Memories that are specific, personal, long lasting, and (usually) of significance to one's self-system. |
| SM | Semantic Memory | Abstract, factual information stored in memory. |
| BRAM | Brand-Related Autobiographical Memory | Brand-related personal experiences stored as episodes in AM with contextual, vivid and affective details. |
| BRSM | Brand-Related Semantic Memory | Brand-related experiences stored in SM as information about brand attributes and characteristics. |
| SPE | Specificity | Recalling contextual information related to brand-related personal memory reconstructed through a hierarchical retrieval process including when, where, and how this has happened. |
| VIVID | Vividness | Mental reconstruction of brand- related personal memory in visual, tactual, auditory, gustatory, and olfactory senses. |
| AFF | Affect | Reconstruction of feelings, mood or emotions experienced in BRAM and/or brand. |
| SBC | Self-Brand Congruence | The global view of how a person view her/him self in relation to the brand. |
| AFBC | Affective Brand Commitment | The affection developed by the consumer towards the brand. |

# Chapter 2 : THEORETICAL FRAMEWORK

## Conceptualising Consumer Brand Memories: Brand-Related Autobiographical Memories (BRAM) and Brand-Related Semantic Memories (BRSM)

## 2.0 Introduction

This research study focuses on consumer brand-related memories and future buying decisions. As detailed in Chapter 1 (please see Sections 1.1, 1.2 and 1.3), the study empirically examines the impact of brand-related autobiographical memory (BRAM) and brand-related semantic memory (BRSM) on self-brand congruence and affective brand commitment.

There are two main research objectives aimed in the study, and they are re-stated below.

1. To conceptualise whether and how brands are stored and retrieved from autobiographical and semantic memory, and whether the psychological and physiological differentiation of these brand memory systems can be validated.
2. To conceptualise and validate the nomological network of relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

To address research objective 1, this chapter is structured to address the following research questions:

1. How can memory systems be conceptualised in a consumer context?
2. How are autobiographical memories relevant to consumer decision making?
3. Can brand-related memories be conceptualised as autobiographical and semantic?

This chapter is divided into three main sections. The concept of memory has been researched in diverse disciplines and therefore applying a multi-disciplinary approach, theories of memory systems are investigated in Section One. Section Two investigates autobiographical memories (AM) which is a distinctive memory system associated with lifetime, personal important events in comparison to semantic memories (SM). Section Three presents how brand-related experiences are stored in AM compared to SM and finally conceptualises brand-related autobiographical memories and brand-related semantic memories on which the hypothesised relationships have been formulated in the next chapter. The organisation of Chapter Two is presented in Figure 2-1 (p.21).

Figure 2-1: Organisation of Chapter Two

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</table>

## 2.1 Theories of human memory systems

Memory is a complex process and has been investigated through multi-disciplinary literature in psychology, neuroscience, social psychology and consumer research. Although early literature considers memory as a unitary system of representations, evolving behavioural and neuroscientific work classifies it into separate sections and systems in the human brain (Welzer and Markowitsch 2005). Tulving (1995) identified three different eras of memory research that have contributed to the current understanding of memory knowledge. The first era focused on the learning and forgetting of normal adults through experiments while the second era identified the process of information processing, and distinguished between short-term and long-term memory. This discovery is critical to the present study recognising the need for further investigation of multiple memory systems. In the third era, memory studies were expanded across disciplines and a neuroimaging approach was employed in studying the concept of memory. This evolution benefits the study of the memory concept within a consumer behaviour paradigm and facilitates the review of neuroimaging studies in investigating autobiographical brand memories. An overview of the historical development of memory research is presented in Table 2-1 (p.23). Tulving (1995) has separated these theories into two main classes of concepts; memory processes and memory systems. Memory processes are considered as the major contribution from the information era whereas memory systems are from the cognitive neuroscience paradigm of memory. Thus, investigation of AM and SM as separate memory systems has been discovered through the latest knowledge on memory.

Table 2-1: Historical development of memory research

| Era | Key Authors | Focus |
|---|---|---|
| First Era<br>1885 – 1960 | Ebbinghaus 1885 | • Verbal learning, emphasised on experimental design and measuring basic phenomena of learning and forgetting in normal adults. |
| Second Era<br>1960 – 1980 | Shallice 1979<br>Warrington 1979 | • Associative verbal learning framework was replaced by information processing paradigm.<br>• Experimental studies distinguished between primary (short-term) and secondary (long-term) memory.<br>• Units of analysis shifted from lists to individual items.<br>• The analytical distinction between storage and retrieval was translated into experimental paradigms that allowed the separation of the two processes.<br>• Influential theoretical concepts such as levels of processing, encoding, retrieval interactions emerged during this stage as did context and context effects.<br>• Connections were established between isolated disciplines of cognitive psychology and neuropsychology.<br>• Encoding, storage and retrieval played a dominant role. |
| Current Era<br>After 1980 | Tulving 1983;1985;1991<br>Cohen 1984<br>Schacter and Moscovitch 1984 | • Thought of as a cognitive neuroscience of memory.<br>• The memory domain has expanded considerably, both horizontally and vertically.<br>• Attention is being paid to memory across life-span development; with theoretically motivated and precisely controlled psychopharmacological studies have appeared.<br>• Computer modelling of memory processes has come more sophisticated.<br>• Neuroimaging approach to the study of memory was rapidly overcoming its initial difficulties.<br>• The age of multi-disciplinary study of memory. |

*(Adapted from Tulving 1995)*

As Tulving (1995) discussed, the organisation of human memory has gradually evolved from various conceptual dichotomies such as memory and habit, short-term memory and long-term memory, episodic versus semantic etc. Combining these dichotomies, Tulving identified five major categories of human memory, or memory 'systems' together with sub-categories and this classification of memory systems is delineated in Table 2-2 below. This classification clearly evidences the existence of memory systems such as procedural, semantic and episodic, and memory processes such as implicit and explicit retrieval that distinguishes the difference between memory systems and memory processes.

Table 2-2: Major categories of human learning and memory



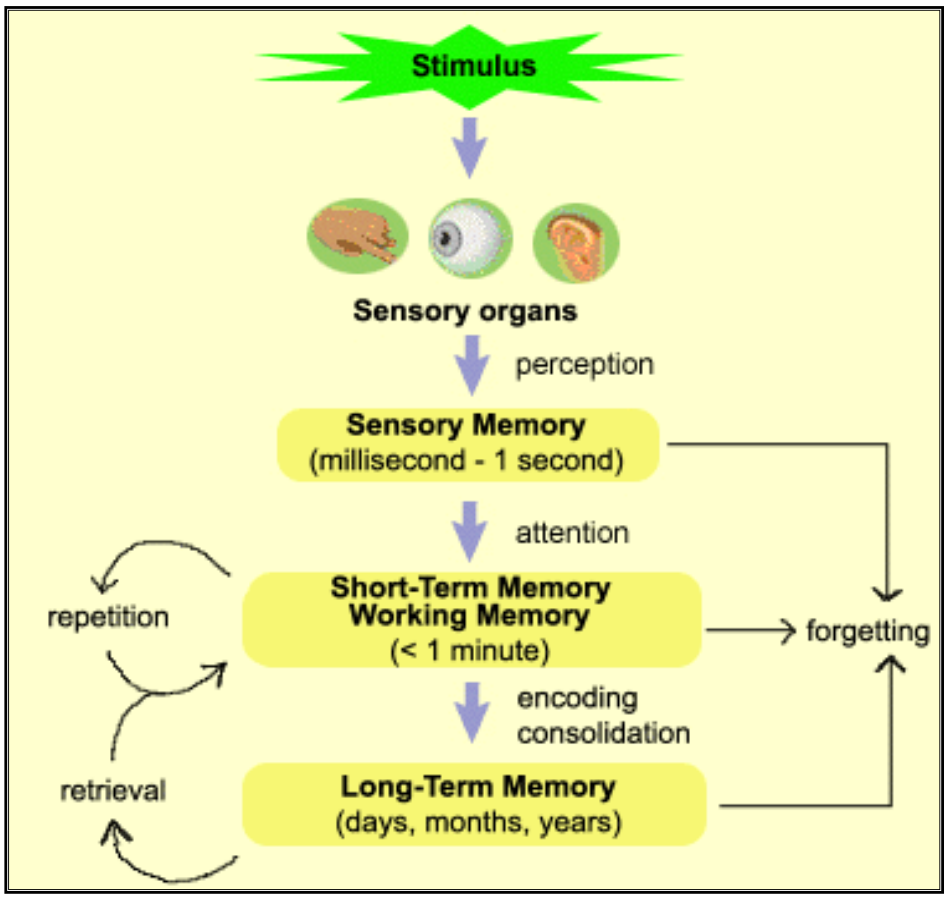
*(Tulving 1995:841)*

There is a principal division between short-term and long-term memory (Cowan 2001; Tulving 1995) and an ongoing debate about the diversity of long-term memory systems (Tulving 2002; Kelly and Jacoby 2000). While Tulving (2002)

distinguishes between five long-term systems (episodic, semantic, procedural, priming, and perceptual) as illustrated in Table 2-2 above, Squire and Zola (1996) and Baddeley, Eysenck and Anderson (2009) divided long-term memory into two major categories: declarative (conscious) and non-declarative (subconscious) systems. The memory classification by Baddeley (2007) (based on the information processing model of memory proposed by Atkinson and Shiffrin 1968) demonstrates a clear view of memory systems and it is depicted in Figure 2-2 (p.26). Understanding the different characteristics and functions of each memory system is important in the study because the behaviour of a person may vary based on the information processed and retrieved by each system. Also this classification may reveal which type of memories are more deterministic towards decision making and influencing human behaviour, which can be relevant and related to consumption behaviour including product and brand decisions.

As Figure 2-2 (p.26) depicts, there are three distinct memory systems based on the information processing perspective: sensory memory, short-term memory and long-term memory and each plays a role in brand-information processing. These three memory systems are discussed below in detail.

Figure 2-2: Classification of memory systems




*(Adapted from Baddeley 2007:3)*

### 2.1.1 Sensory memory

As Avery et al. (2010), Baddeley (1997, 2010) and Solomon et al. (2006) defined, sensory memory stores information received from our five senses (eyes, ears, nose, mouth and fingers). The storage of this memory is temporary because these sensations may only last for a few seconds and generally disappear in less than a second. If information is retained for further processing, it transfers to the short-term memory. If we do not pay attention to a stimulus, it may vanish (Avery et al. 2010).

### 2.1.2 Short-term memory

Short-term memory relies on the attention paid to the elements of sensory memory (Baddeley 1997). In the short-term memory system, information is stored for a limited time duration and its capacity is limited (Avery et al.2010; Solomon et al. 2006; Cowan 2001). Generally, short-term memory lets a person retain a piece of information for less than a minute and retrieve it during this time (Solomon et al. 2010). One typical example of its use is the task of repeating a list of items that has just been read in their original order. In general, short-term memory can retain 5 to 9 items (or, as it is often put, 7±2 items) (Baddeley 1997, 2010).

Avery et al. (2010) and Baddeley (1997) discussed the working memory as an extension to the concept of short-term memory because with advanced techniques of investigating memory, it was evident that short-term memory as a simple temporary vessel for long-term memory is too basic. Specifically it was clear from the studies that there is no clear demarcation between memories and thoughts. Thus, the concept of working memory has evolved to understand this complex process.

As Just and Carpenter (1992) state, working memory plays a central role in all forms of complex thinking such as reasoning, problem solving, and language comprehension. In other words, working memory performs cognitive processes on the items that are temporarily stored in it (Baddeley 2007). Some examples of the working memory are the task of repeating a list of items that has just been read, but in the reverse of their original order, and the task of simultaneous interpretation, where the interpreter must store information in one

language while orally translating it into another (Baddeley 2007; Just and Carpenter 1992). Working memory also appears to consist of several independent systems that we are unaware of all information stored in memory. For instance, when driving a car, several complex tasks will be performed simultaneously (Just and Carpenter 1992).

### 2.1.3 Long-term memory: process vs. systems

Long-term memory includes both our memory of recent facts as well as our memory of older facts, which has become more consolidated (Anderson 2000; Tulving 1991). This memory consists of three main processes that take place consecutively: encoding, storage, and retrieval (recall) of information. These stages are discussed below as explained by Solomon et al. (2010), Baddeley, Eysenck and Anderson (2009), Malapani, Deweer and Gibbon (2002) and Squire and Zola 1996).

Encoding allows information that is from the outside world to reach our senses in the forms of chemical and physical stimuli. In the encoding process, a meaning is assigned to information to be memorised. For example, one might encode the word 'lemon' as 'fruit, roundish, yellow'. When one cannot recall the word 'lemon', an index (such as 'fruit') prompts one to encode and retrieve information. The success of information retrieval depends on the depth of encoding and how well this information is organised in memory. This encoding process includes information including its environmental, cognitive and emotional context (Baddeley, Eysenck and Anderson 2009; Malapani, Deweer and Gibbon 2002).

Storage is the second memory stage or process. This entails that we maintain information over periods of time by creating permanent records of the encoded information. In storage, memories of recent facts and older facts are differentiated and merged where older factors associated with a larger amount of pre-existing knowledge. Sleep, and in particular the rapid-eye-movement (REM) phases of sleep, along with reviewing (such as studying for exams) play a large role in consolidation (Baddeley, Eysenck and Anderson 2009).

In memory retrieval, information is temporarily copied from long-term memory into working memory to be used. When memory has been encoded, elaborated, organised and structured well, it will be easier to retrieve (Squire and Zola 1996). Therefore, as Baddeley (1997) posited, forgetting can be caused by failures at any of these three stages due to poor encoding, insufficient consolidation or difficulties in retrieval.

The relationship between recall and recognition has been a central topic in studying the retrieval of information encoded in long-term memory (Haist, Shimamura and Squire 1992; Tulving 1976). Recall involves actively reconstructing the information, whereas recognition only requires a decision as to whether one thing among others has been encountered before. Thus, individuals can explicitly evaluate their memory and can either retrieve items (recall) or make judgements as to whether or not items are familiar (recognition) (Haist, Shimamura and Squire 1992). This recall and recognition is of critical importance in influencing consumer purchase decisions because consumers' future purchase of brands and products may depend on recall and recognition status of prior experiences related to these products and brands.

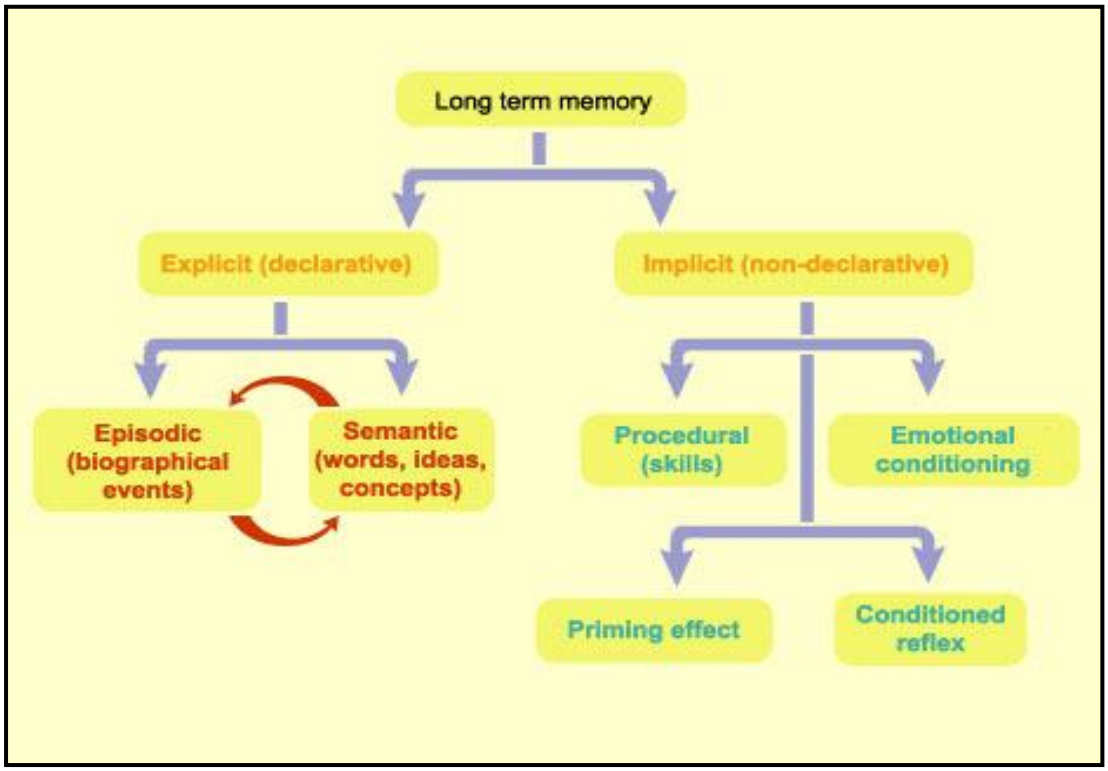
This memory process also has direct conations of the distinction made between implicit and explicit memory (Schachter 1987; Graf and Schacter 1985). Tulving (1995) claimed that these are not memory systems, but are different forms of expression of memory. Implicit memory designates the expression of stored information without awareness of its acquisition coordinates in space and time; in other words, expression of what the individual has learned without necessarily remembering how, when or where learning occurred. Explicit memory, on the other hand, refers to the expression of what the person is consciously aware of as a personal experience. The SPI model (Serial, Parallel, and Independent) proposed by Tulving (1995) assumes that the nature of relations among different cognitive systems is process specific, i.e. 1. information is encoded into systems serially, i.e. the output from one system provides the output into another, 2. information is stored in different systems in parallel (i.e. the information in each system and subsystem, even if it all originates in one and the same subsystem, even if it all originates in one and the same act of perception, or 'study episode' is different from that in others, with respect to storage, different systems operate in parallel), and 3. Information from each system and sub-system can be retrieved without any necessary implications for retrieval of corresponding information in other systems. Thus with respect to the process retrieval, different systems are independent (Tulving 1995).

The above discussion highlights the importance of long-term memory retrieval rather than sensory and short-term memories. Specifically the influence of memory retrieval through recall and recognition on future purchase decisions is significant in memory-based and mixed-based decisions, which can only be applied in long-term memory retrieval. Thus, the following sections further

investigate different aspects of long-term memories important in understanding the research phenomenon.

A more comprehensive classification of long-term memory systems was put forward by Squire and Zola (1996) as depicted in Figure 2-3 in p.32). Based on the information processing, long-term memories are mainly categorised into two: declarative and non-declarative, and declarative memories are further classified into episodic versus semantic, while non-declarative memories are classified as procedural and emotional conditioning. Although in the actual workings of human memory, these various subsystems are interacting all the time (Baddeley, Eysenck and Anderson 2009), it is important to investigate how information is processed differently in different memory systems to discover which systems are more likely to influence in future buying behaviour. Thus, the following sections discuss these long-term memory systems in detail.

Figure 2-3: Long-term memory systems




*(Adapted from Squire and Zola 1996: 13516)*

2.1.3.1 Declarative vs. non-declarative memory

Memory systems that are distinct from each other (i.e. declarative and non-declarative memory systems) can be separable based on multiple criteria discussed below. It is possible to distinguish declarative and non-declarative memory systems not only in terms of anatomy, but also in terms of operating characteristics, the kind of information processed, and the purpose served by each system (Tulving 1991). Squire and Zola (1996) posited that the key distinction is between the capacity for conscious recollection of facts and events (declarative memory) and a heterogeneous collection of non-conscious learning capacities (non-declarative memory) that are expressed through performance and that do not afford access to any conscious memory content. They identified key distinctions between declarative and non- declarative memory, because

these memory types differ with respect to the flexibility of the knowledge acquired by each system. Declarative knowledge is accessible to multiple response systems whereas non-declarative memory is more encapsulated and has less access to systems not involved in the initial learning. Another important distinction is that declarative memory supports conscious recollections, whereas non-declarative memory does not afford awareness of any memory content (Squire and Zola 1996). Similarly Mantonakis, Whittlesea and Yoon (2008) have seen declarative memory as consciously represented and retrievable and as being made up of a memory for facts (semantic memory) and memory for events (episodic memory), while non-declarative memories are classified into procedural, priming, associative, as well as non-associative conditioning, and are largely subconscious.

The procedural systems are behavioural or cognitive action systems. Skilful performance of many perceptual-motor and cognitive tasks are examples of tasks that depend heavily on the procedural memory systems (Tulving 1995). Perceptual priming is a special form of perceptual learning that is expressed in enhanced identification of objects as structured physical-perceptual entities. A perceptual encounter with an object on one occasion primes or facilitates the perception of the same or a similar object on a subsequent occasion, in the sense that the identification of the object requires less stimulus information or occurs more quickly than it does in the absence of priming (Tulving 1995).

This discussion highlights the difference between conscious recollection in declarative memories and subconscious features of non-declarative memories, which set down the focus on towards declarative memories, because consumer

decision making is essentially based on conscious recollection of prior memories than subconscious priming or procedural learning (Warlop, Ratneshwar and Osselaer 2005; Shipro and Spence 2002; Nordhielm 2002). Thus, the following sections present a detailed discussion of the two declarative memories; semantic and episodic that is relevant to the study of autobiographical memories from a consumption perspective.

#### 2.1.3.2 Semantic vs. episodic memory

Tulving (1983) distinguished between semantic memory and episodic memory, where semantic memory refers to context-independent general knowledge of the world and episodic memory refers to autobiographical events (Welzer and Markowitsch 2005). Specifically, the episodic system preserves details of particular experiences and supports remembering tasks (recall and recognition), while the semantic system preserves conceptual and categorical knowledge and supports non-remembering activities (perception and identification) (Tulving 1983, 1985). The primary distinction is therefore between 'remembering', which depends on event-specific information, and 'knowing', which depends on the abstract summary of prior experiences (Mantonakis, Whittlesea and Yoon 2008: 83). A detailed analysis of each system is given below in investigating important differences that may affect consumption decisions.

The domain of semantic memory consists of stored information about the features and attributes that define concepts and the processes allowing to efficiently retrieve, act upon and produce this information in the service of thought and language (Martin and Chao 2001: 194). Baddeley, Eysenck and Anderson (2009) identify the semantic memory as the store of knowledge of the

world. This is a knowledge base that all have, and much of which can be accessed quickly and effortlessly. Semantic memory includes meanings of words (such as university, teacher, exam), the names of the world's great capitals, social customs, the functions of things, and their colour and odour (Baddeley, Eysenck and Anderson 2009; Martin and Chao 2001: 194). Semantic memory also includes our memory of the rules and concepts that let us construct a mental representation of the world without any immediate perceptions. Its content is thus abstract, relational and is associated with the meaning of verbal symbols (Baddeley, Eysenck and Anderson 2009). Importantly semantic memory is independent of the spatial/temporal context in which it was acquired. Since ths is a form of reference memory that contains information accumulated repeatedly throughout our lifetimes, it enables the acquisition and retention of factual information in the broadest sense providing an individual with the necessary material for cognitive operations (Baddeley, Eysenck and Anderson 2009). Tulving (1995) posits that semantic memory is merely a historical accident, and a better phrase to refer to it is general knowledge of the world (Tulving 1995). Thus, this semantic nature of abstract consumption knowledge may be relevant in influencing consumer-buying decisions. This semantic knowledge also addresses an important research issue in cognitive or rational decision making (Shiv and Fedorikhin 1999) because rational decisions are predominantly based on abstract brand knowledge that is free from affective or contextual information, but based on brand attributes and utilitarian benefits (Warlop, Ratneshwar and Osselaer 2005; Shapiro and Spence 2002).

However, episodic memory enables individuals to remember their personally experienced past, that is, to remember experienced events as embedded in a

matrix of other personal happenings in subjective time (Tulving 1985). Although these episodic memories sometimes depend on semantic memories in information retrieval, the range of the capabilities in storing information of these memories exceed semantic memory. The most distinctive aspect of episodic memory is the kind of conscious awareness that characterises memory of past happenings. This awareness is unique and unmistakably different from the kind of awareness that accompanies perceptual experiences, imagining, dreaming, solving of problems, and retrieval of semantic information. To distinguish the episodic memory awareness from these other kinds, it has been referred to as autonoetic consciousness (Tulving 1985).

The most distinctive feature of episodic memory is that one see her/his self as an actor in the events, and therefore memorizes not only the events themselves, but also the entire context surrounding them (Baddeley, Eysenck and Anderson 2009; Mantonakis, Whittlesea and Yoon 2008). An episodic memory has the phenomenal characteristic of referring to something that happened once at a specific time and place. However, the specific identification of time and place does not seem to be necessarily part of episodic recall, although adults can often reconstruct an episodic memory from different types of cues, and find ways to identify a specific time and place at which a specific event was experienced, even if the location is not available in declarative form (Nelson 1993). In consumption decisions, this episodic nature of prior experiences may have a strong influence due to the rich contextual details that exist in consumption memories compared to the abstract information that exists in semantic memories (Sujan, Bettman and Baumgartner 1993). Thus, it is important to investigate what sort of episodic memories are more influential in human

behaviour so that those memories can be equally important in consumption decisions as well. In particular, the episodic nature of autobiographical memories has a strong influence on our behaviour (Gluck et al. 2005; Bluck and Gluck 2004; Neisser 1988) and therefore the following sections discuss the nature and functions of this autobiographical memory in detail.

## 2.2 Autobiographical Memory (AM): structure, qualities and functions

In the psychology literature, there is an ongoing debate as to whether AM is the same as episodic memories. Baddeley, Eysenck and Anderson (2009) posit that episodic memory is same as AM, which lets a person remember events he or she has personally experienced at a specific time and place. However, as Nelson (1993) posited, it is important to note that not all episodic memory is AM because this is critically important in the theoretical and empirical explication of the development of AM. For example, food a person ate for lunch yesterday is today part of his or her episodic memory, but if this food is not special in any way, it will not become part of the AM, as it has no significance to the life story beyond the general schema of lunch. In contrast, the first time one presented a paper at a conference can be part of his or her autobiographical memory as she/he remembers the time, place, and details of the programme and participants, and one may have a sense of how that experience fits into the rest of his/her personal life story (Nelson 1993).

Thus, Autobiographical memories (AM) are defined as 'specific, personal, long lasting, and (usually) of significance to the self-system or as forming one's personal life history' (Nelson 1993: 8). This is also known as personal memory

(Brewer and Pani 1983) or self-defining memory (Blagov and Singer 2004; Conway 1990; Fivush 1988; Brewer 1986, 1988). Conway, Pleydell-Pearce and Whitecross (2001:494) emphasise that 'autobiographical remembering is a dynamic process extended in time and is present in particular brain regions at different periods during memory construction'. The following sections discuss the structure, qualities and functions associated with AM that are important and relevant in consumption behaviour.

### 2.2.1 Structure of AM

An emerging view is that AM is hierarchically organised (Conway 1992; Schooler and Hermann 1992; Barsalou 1988). Anderson and Conway (1993) found a hierarchical organisation of the AM structure at three levels: general knowledge related to lifetime period, intermediate knowledge from extended events and memories of specific events. They argued that memory capacity is determined both by thematic and temporal knowledge. Consistently, the theoretical model developed by Conway and Pleydell–Pearce (2000) consists of three broad levels of AM: lifetime periods, general events and event specific knowledge (ESK).

Lifetime periods are described by distinct time-periods. However, time-periods are vague rather than discrete. These memories represent general knowledge about significant others, actions, activities, goals and often interlinked to general events. Although general events have indications of lifetime, these are considered as repeated general events (Barsalou 1988) as the description is more specific and heterogeneous than lifetime periods. These events are often organised featuring goal attainment knowledge and convey significant information about the self. As Salovey (1992), stated general event memories

are self-defining memories. Event specific knowledge is a situation of event specific memory retrieval and the imagery is a predominant role in event specific AM (Brewer 1986).

Although these events are interlinked, event-specific knowledge details are contextualized in a general event and that in turn is associated with lifetime periods, they can be disassociated on different levels of specificity (Anderson and Conway 1993; Conway and Pleydell–Pearce 2000). In a broad manner, Brewer (1986) used the word technique introduced by Galton (1883) to identify multiple forms of AM and differentiated them from non-AM. He posited that personal memory, autobiographical fact and general personal memory are three forms of autobiographical memories and other forms of memory (i.e. semantic memory and generic perceptual memory) are non-AMs. Accordingly, Brewer (1986) organised the AM structure in the form of imagery or non-imagery through single or repeated events related to objects, places, events and actions. This scenario can be further elaborated through an example: General abstract knowledge relating to lifetime periods from an individual's life forms the top level of the hierarchy (*e.g. when I lived with 'X'*), intermediate knowledge in the form of general or extended events constitutes a second level (*e.g. a holiday in Italy*) and memories of specific events form the lowest level in the hierarchy (*e.g. eating out in Rome with X*) (Conway and Pleydell–Pearce 2000;Anderson and Conway 1993) featuring goal attainment knowledge and convey significant information about the self (Salovey 1992). Conway and Bekerian (1987) referred to such hierarchical AM knowledge structures as AM Organisation Pockets, or A-MOP's. Barsalou (1988) later proposed that A-MOPs might be thought of as partonomies in which specific memories are part of a general event that in turn

is part of a lifetime period. Event specific details are contextualised within a general event that in turn is associated with lifetime periods although they can be disassociated on different levels of specificity such as people, locations, objects, action and times (Conway and Pleydell–Pearce 2000;Anderson and Conway 1993).

### 2.2.2 Qualities of AM

Robinson and Swanson (1990) identified three distinctive qualities of AM; feeling belongingness, phenomenal re-experiencing and memory perspective. Firstly, the personal quality of memories is one of the most basic phenomenal features of autobiographical recall or feeing belongingness. Secondly, in autobiographical recall, we often re-experience the original episode through the extent of vividness and this re-experiencing varies greatly. If the contents of consciousness are sufficiently vivid, we are meant to be reliving the experience. Subjective certainty about recall is highly related to the level of visual imagery experienced. Other modalities (e.g. auditory, tactile and affective) of re-experiencing are related to subjective certainty in varying degrees. Accuracy of recall was positively correlated with reported levels of re-experiencing. Thirdly, when remembering an event, a person may visualise it as a field of view as in the normal perception of an outside observer, 'seeing' the self-engaged in the activity being recalled. Several have stated that the image they experience is more like a template than an accurate depiction of them in the context of the remembered event. These different qualities of AM facilitate a person to perform different functions in society, including consumption, and therefore functions of AM discussed below can be considered as consequences of AM.

### 2.2.3 Functions of AM

Nelson (1993) discovered when and why an autobiographical system in which some memories are retained for a lifetime becomes differentiated from a general episodic system. This is because of social interaction development of the autobiographical memory, as proposed by Fivush and Reese (1992), and Pillemer and White (1989). In this view, children gradually learn how to talk about memories with others, and thereby they learn how to formulate their own memories as narratives. These memories become valued in their own right, not because they predict the future and guide present action, but because they are shareable with others and thus serve a social solidarity function (Nelson 1993).

Nelson (1993) further considers AM as a universal human function, although one with variable, culturally specific rules. Yet this social function of memory underlies all of storytelling, history-making narrative activities, and ultimately all of our accumulated knowledge systems. Sharing memory narratives is important to establish the new social function of autobiographical memory, as well as to make reinstatement through the possible language. Once an AM system is established, it takes a personal as well as a social value in defining the self (Nelson 1993).

Because such memory is both personal and social, it enables us not only to cherish our private memories, but also to share them with others, and to construct shared histories as well as imagined stories in analogy with reconstructed true episodes. Once a child has begun to share memories with others, he or she is well on the way to share all of the accumulated cultural knowledge offered at home, in school, or in the larger world. Another basic

function of AM is to provide a base of experience for constructing internal models of other selves. Neisser (1988) also posits the social function of AM, because this memory talk is a way of using the past to maintain or extend current interactions with others.

Considering all above views, Gluck et al. (2005) posited functions of AM under three main broad categories: directive (planning for present and future behaviours), self (self–continuity, psychodynamic integrity), and communicative (social bonding) functions. The directive function of AM involves using the past to guide present and future thoughts and behaviour in a number of ways. AM help us to solve problems, to develop opinions and attitudes (Pillemer 1998; Cohen 1989), to ask new questions of old information in order to solve problems in the present to predict future events (Lockhart 1989; Baddeley 1986) and to guide present or future behaviour through the lessons learned in the past (Bluck and Gluck 2004; Pratt et al. 1999; McCabe Capron and Peterson 1991).

The self-function of AM has received the most emphasis in studies of AM (Buck and Levine 1998; Brewer 1986) because knowledge of the self in the past and as projected into the future has been seen as a critical type of self- knowledge (Neisser 1988). Conway and Tacchi (1996) claims the adequacy of autobiographical knowledge depends on its ability to support and promote continuity and development of the self. Similarly, a hypothesized function of the personal past is to preserve a sense of being a coherent person over time (Barclay 1996). Fivush (1998) also described how this coherent sense of self develops in young children, and has extended the importance to describe the emergence of the life story in adolescence (Habermas and Bluck 2000; McAdams

1985). Importantly self-functions such as emotion regulation (Pasupathi 2003) and self–concept preservation/enhancement (Wilson and Ross 2003), have been suggested as normative and useful aspects of self–regulation across adulthood (Cohen 1998).

The importance of AM in developing, maintaining, and nurturing social bonds has been very prominent (Pillemer 1998; Nelson 1993). The basic social function AM serves as a way to provide material for conversation that facilitates social interaction (Cohen 1998). As Pillemer (1992) posits, sharing personal memories makes one's contribution to conversations more believable, persuasive and may allow a person to better understand and empathize with others (Cohen 1998). Providing others with information about one's self is another function that memory serves in initiating new social relationships (Cohen 1998). Memories can also be shared with those who did or did not take part in the remembered event and sharing such AM with someone who was not present provides the listener with information and this can serve an intimacy or bonding function (Fivush, Haden and Reese 1996).

These functions of AM clearly demonstrate the importance and influence of AM on one's behaviour in dynamic social affairs that are essentially relevant in understanding consumption behaviour. The structure, qualities and key functions of AM are summarised in Table 2-3 (p. 44), which demonstrates the organisation, manifestation and consequences of AM that is important and relevant in product/brand-related consumption situations.

Table 2-3: Structure, functions and qualities of AM

| **Structure of AM** | **Manifestation of AM** | **Consequences/Functions of AM** |
|---|---|---|
| Life time periods ⇩ | Feeling belongingness (Affect) | Directive function<br>- planning present and future behaviour |
| General events ⇩ | Phenomenal re-experiencing (Vividness) | Self-function<br>- Self-regulation and self-enhancement |
| Event specific knowledge | Memory perspective (self-engagement) | Social function<br>– Social relationship maintenance and development. |

## 2.3 Autobiographical Memory (AM) vs. Semantic Memory(SM)

As discussed above, remembering autobiographical experience is in direct contrast to the experience of 'knowing of' an event, which is semantic in nature than episodic (Tulving 1983, 1985). Because autobiographical events can be traced back in time, tightly specific to their original context, time and place (Tulving and Markowitsch 1998), these AM can be more influential towards consumer purchase decisions in comparison to semantic memories. In other words, when one recalls information from AM and makes judgements, the outcome may be different from the judgements made by recalling SM due to the information intensity and affect associated with AM in comparison to the SM.

Studies considering AM and SM in the areas such as psychology, medicine, and sociology show distinct differences among these two memory systems. The differences include storing, processing, and retrieval of information in memories

resulting in different behavioural outcomes as summarised in Table 2-4 (p. 46). Importantly, when AM are recalled, emotions experienced at the time of the event influence subsequent behaviour, whereas in SM such influence is not evident. Thus, in this study, consumer memories have been investigated to elaborate and relate this phenomenon in brand-related consumption decisions.

Table 2-4:Studies of AM and SM

| **Author** | **Focus of the study** | **Definition** | **Function/outcomes** |
|---|---|---|---|
| **AM** | | | |
| Welzer and Markowitz 2005 | An integrative approach to the phenomena of memory and reminiscence based on current theories from the social, cultural and biological sciences. | AM are emotional, self-reflective memories. | Emotions play an important role in evaluating events. |
| Pernot-Marino, Danion and Hedelin 2004 | Whether conscious recollection for AM is influenced by the emotion experienced. | The subjective experience of reliving a personal event mentally. | At the time of AM retrieval, behaviour is influenced by emotions experienced. |
| Addis and Tippett 2004 | Assessed the status of AM and identity. | AM contributes to trait self-knowledge and to self-narratives, enabling the integration of past and present selves and contributing to the sense of identity. | Childhood and early adulthood AM influence on strength and quality of one's identity. |
| Alea and Bluck 2003 | Provides a conceptual model of social function of AM. | Memories for specific events, life periods and domains. | AM influences social functions such as relationship development and maintenance. |
| **AM and SM** | | | |
| Ryan et al. 2008 | Compare category production and category cued recall during episodic and SM retrieval. | Category production is considered a classic tool for evaluating SM. | AM helps individuals to generate SM (category exemplars). |

| | | | |
|---|---|---|---|
| Burke and Mackey 1997 | Highlight theoretical and practical implications of memory, language and learning. | AM - Ability to remember specific events situated in time and place.<br>SM - Store of knowledge and skills and associated to the language. | Old adults were able to remember the knowledge in SM while they failed to recall AM episodes. |
| Olson et al. 2010 | The case of a calendar savant with episodic memory impairments. | Poor episodic memory is supplemented by using calendar information. | Individuals can have strong SM but with impaired AM. |
| Mantonakis, Whittlesea and Yoon 2008 | Separate systems approach to memory | AM –remembering<br>SM –Knowing | Result in recall and recognition.<br>Result in perception and identification. |
| **SM** | | | |
| Thompson-Schill 2002 | Representation, organisation and retrieval of SM. | General knowledge of concepts and facts. | Frontal cortex contributes to semantic retrieval of concepts and facts (for problem solving). |
| Hornberger et al. 2009 | Judgements of semantic memory with patients impaired in Alzheimer's disease. | Store of every-day knowledge about the meanings of words and objects. | Fail to retrieve semantic tasks. |
| Nessler et al. 2006 | Brain activity in young and elderly persons during low and high-selection versions of a semantic task. | Knowledge about the world. | Semantic retrieval reduces subsequent episodic recognition and memory performances are inconsistent with age. |

## 2.4 Brand-related consumption memories

The AM and SM conceptualisation of memory systems can be successfully applied to brand-related memories or prior consumption experiences. Brands and consumption experiences may be associated with significant personal, lifetime events such as birthday celebrations, weddings, holidays so that those memories are essentially stored in AM, whereas brand-related experiences that are not so significantly associated with lifetime memories may be stored in SM.

This memory classification is important in the recent debates in consumer behavioural studies because behavioural decision theory has predominantly focused on cognitive aspects of decision making without exploring its emotional dimensions (Kahnemen 1991) and, therefore, contrasts actual choices to predictions derived from rational models. From the perspective of memory-based decisions, these decisions may derive from SMs because this system deals with cognitive-based conceptual knowledge. In comparison, AMs may deal with emotional dimensions and self-relevance in decision-making. Consumer research has previously focused on brand-related SM rather than the episodic nature of AM. Although the majority of studies do not explicitly conceptualise memory into the semantic and autobiographical memory systems, the literature summary detailed in Table 2-5 (p. 50) clearly demonstrates the dominance of memory studies based on factual information about brand decisions in comparison to episodic nature of autobiographical memories. For instance, Shipro and Spence (2002) claim that brand attributes enhance brand choice; Warlop, Ratneshwar and Osselaer (2005) contend that brand names and packaging increase product evaluations and Nordhieim (2002) posit that exposure frequency influences information processing. In contrast, Adaval and Wyer (1998) found a strong

influence upon AM narratives than SM while Baumgartner, Sujan and Bettman (1992) discovered a reduction in product information analysis and product judgement when AM are evoked. Whilst this distinction is significant in future purchase decisions, it is important to investigate how brand experiences and perceived images store in consumer AM and SM. Thus, the following sections discuss different drivers of perceived brand image and brand-related experiences.

Table 2-5: A classification of consumer memory studies

| **Study** | **Focus of the Study** | **Defined Memory** | **Outcome/Effects** | **Category** |
|---|---|---|---|---|
| Shapiro and Spence 2002 | Relative effect on sensory attributes and market information on brand choice. | Encoding and retrieving product attributes. | Providing evaluative criteria for sensory attributes enhance brand choice. | BRSM |
| Nordhielm 2002 | Repetition of features of a stimulus and response judgements. | Semantic content of a feature is processed. | Relationship between exposure frequency and effective response is mediated by the level of information processing. | BRSM |
| Warlop, Ratneshwar and Osselaer 2005 | Consumer experiential learning from a memory perspective. | Memory representation of a brand typically includes many associations such as product category, consumption benefits or semantic associations. | Extrinsic cues such as brand names and packaging increases product evaluations. | BRSM |
| Burke and Srull 1988 | Memory inferences in advertising context. | Individuals mentally compare attributes of various brands. | Repetition has a positive effect when there is no or little advertising for similar products. | BRSM |
| Biehal and Chakrawarthi 1983 | How learning goals and task structure effect retrieval of product information and choice process. | Memory content and organisation is influenced by learning goal and the structure of the task environment. | Learning goals and information formats moderate information processing and choice. | BRSM |

| | | | | |
|---|---|---|---|---|
| Baker 2003 | Explores the concept of brand name imprinting (i.e. creating and strengthening the brand name in brand memory network). | The activation of brand name facilitates the conscious retrieval of brand information. | Brand name imprinting facilitates consumers to retain brand information in memory. | BRSM |
| Noel 2006 | The relationships between repetitions of brand attribute associations and recall. | The greater the memory of a brand name, greater the likelihood that the brand enters into the consideration set. | Repetition of brand attributes increase greater recall. | BRSM |
| Kardes and Kalyanaram 1992 | Effects of order of entry on consumer memory and judgements. | Consumers learn more about early brands than followers. | Order of entry effects consumer memory and judgement. | BRSM |
| Adaval and Wyer 1998 | The role of narratives in consumer information processing. | Memory consists of stories that they construct from their personal and social experiences. | AM memory narratives are more influential than SM. | BRAM |
| Baumgartner, Sujan, and Bettman 1992 | Consider the role of consumer's AM in information processing. | AM episodes differ from self-schema cognitive structures that contain abstract knowledge. | When AM are evoked, reduction in product information analysis and influence on ad/product judgements. | BRAM |

| | | | | |
|---|---|---|---|---|
| Sujan, Bettman and Baumgartner 1993 | Affective nature of AM and brand judgements. | AM are self-reflective and affective. | Ads that encourage the retrieval of AM, increases level of felt affect and reduce processing of product attributes. | BRAM |
| Braun-Latour Latour and Zinkhan 2007 | Using childhood memories to gain insight into brand meaning | AM provides marketers with memory stories that can be a projective tool for understanding consumers' thoughts and feelings about a product or brand. | AM influence on current and future preferences across the consumer life cycle. | BRAM |
| Braun, Ellis and Loftus 2002 | Advertising influence on past memories | Autobiographical referencing lead to the creation of false or distorted memory | Autobiographical referencing influences consumers' recollections, and the ads build their memory. | BRAM |

## 2.5 Formation of consumer brand experiences

A brand is defined as "a name, term, sign, symbol, design or combination of them which is intended to identify the goods and services of one seller or groups of sellers and to differentiate them from others" (Kotler 1991: 442). These individual brand components are called brand identities and their totality is the brand (Keller 1993). For marketing organisations, branding is the process of creating a brand image that engages the hearts and minds of consumers and separates from competitor offers (Duncan 2005). For customers, brand image is the driver for purchasing these brands. Originally, brands were developed in the industrial trade to control sales from retailers. However, when brands diversified to the field of consumer goods, the branding concept has widely spread for consumer goods (Biel 1992).

Recently, brand experience has attracted increasing attention in marketing practice due to the importance of understanding how consumers experience brands. This was critical for developing marketing strategies for goods and services by marketing professionals (Brakus, Bernd and Zarantonello 2009). Product and brand experiences occur when consumers interact with products, when consumers search for products, examine and evaluate them (Hoch 2002). This experience can be direct when there is physical contact with the product (Hoch and Ha 1986) or indirect (Kempf and Smith 1998; Hoch and Ha 1986). Importantly experiences arise in a variety of settings, and most experiences occur directly when consumers shop, buy, and consume products or brands. Knowing that most studies on experiences focused on utilitarian product attributes and category experiences, Brakus, Bernd and Zarantonello (2009) conceptualized brand experience as subjective, internal consumer responses

through sensations, feelings, and cognitions. According to Brakus, Bernd and Zarantonello (2009), brand experiences vary in strength and intensity in that some brand experiences are stronger or more intense than others are and vary in valence. In addition, some brand experiences occur spontaneously without much reflection and are short-lived while others occur more deliberately and last longer. Over time, these long-lasting brand experiences stored in consumer memory affect consumer satisfaction and loyalty (Oliver 1997; Reichheld 1996).

From a consumer's perspective, they form a perception in memory about the brand based on these marketing experiences. This is known as the brand image. Biel (1992) defines brand image as a cluster of attributes (formed through hard or soft attributes) and association consumers connect to the brand name. More broadly, Keller (1993:3) defined the brand image as "perceptions about a brand as reflected by the brand associations held in consumer memory". According to Keller, brand associations are informational nodes that hold meanings of brands to consumers, and these nodes are linked to the brand node in consumer memory. These informational nodes can be different drivers that help consumers to form a brand knowledge or perception through their brand experiences and store it in their memory.

## 2.6 Drivers of brand-related memory

Literature posits that brand experiences can be formulated through a range of drivers, such as physical, functional, and emotional brand attributes (Kotler and Keller 2006; Plummer 2000; Biel 1992); brand personality characteristics (Aaker 1997, 1999); nostalgic experiences (Sierra and McQuitty 2007; Goulding 1999); and brand heritage (Simms and Trott 2006; Batra and Homer 2004; Plummer

2000; Aaker 1996). These drivers are discussed in detail in the following sections.

### 2.6.1 Brand attributes: physical and functional

As Plummer (2000) states, brand image is portrayed by three different characteristics; physical attributes; functional characteristics and brand personality. Physical characteristics are independently verifiable while functional characteristics or the consequences of using a brand are objectively verifiable. These are external functions and can have internal effects on the product user. For example, a car or an automobile brand can include attributes such as prestige, cost, reliability, exclusivity, availability, and country of origin. The third way is describing characteristics of a brand such as modern, old fashioned, lively or exotic, and is known as brand personality (Plummer 2000).

Biel (1992) stated that the brand image is formed by hard and soft attributes and three sub images; the image of the provider of the product or service (corporate image), the image of the use, and the image of the product or service itself. Hard associations are perceptions of tangible or functional attributes such as speed, premium price, user friendliness, length of time in business or number of flights per day, while softer attributes are more emotional, such as excitement, trustworthiness, fun, dullness, masculinity or innovation (Biel 1992). For example, the brand Apple might be associated with youthful ingenuity while IBM might be linked to efficiency. However, the relative contribution of these three elements may vary by product category and by brand. For example, in Marlboro, the reputation of Phillip Morris does not play a role in forming the brand image, while the corporate reputation of 'Richard Branson' plays a critical

role for the brand image of Virgin. In contrast, for IBM or Macintosh, all three components are important (Biel 1992).

Aaker (1991) provided a categorisation of brand association consisting of eleven categories; product attributes intangibles, customer benefits, relative price, use/application, user/customer, celebrity/person, lifestyle/personality, product class, competitors and country/geography. Kotler (2000) also recognised the diversity of brand association and developed a model consisting six levels of brand meaning: attributes, benefits (functional and emotional), values, culture, personality and user. As Farquhar and Herr (1993) stated, brand image consists of product attributes, customer benefits, usage situations and other summary evaluations. The study by Simms and Trott (2006) modelled key components of the Mini brand and identified three major brand associations: product related attributes, brand personality and brand heritage or history. Freling and Forbes (2005a) claimed that intrinsic and extrinsic cues attached to the physical contents of a brand have an impact on the brand image, and this image cannot be changed without altering the nature of the product itself. Similarly, Aaker (1997) and Batra, Lehmann and Singh (1993) posited that a brand image can be formed based on the typical users associated with the brand, employees or CEO, product-related attributes, packaging details, product category associations, brand name, symbol, advertising message, advertising style, price and distribution channel.

However, capturing most of the above elements, Keller (1993) reviewed three major categories associated with the brand image; attributes, benefits and attitudes. Attributes are either product related attributes (physical attributes) or

non-product related attributes (price information, packaging or product appearance information, user imagery or who uses the brand, and usage imagery or in what type of situations the brand will be used). However, Keller (1993) argues that these associations vary according to favourability, strength and uniqueness of associations. Favourability of brand association is how favourably these associations are evaluated in purchases. Strength is the extent of connection to the brand node, or how strongly associations are connected to the brand. Strength depends upon the quantity and quality of information received and stored in the memory. Uniqueness is how associations are shared or not with other competing brands and USPs (Unique Selling Propositions) provide a reason for consumers to buy a brand (Keller 1993). Overall, these brand attributes and physical characteristics are essentially factual and abstract information about brands that can retain in SM compared to the AM relevant to consumers' prior experiences.

### 2.6.2 Brand personality characteristics

As Peter et al. (2007) stated, the concept of brand personality is a simple translation of the personality concept from the individual psychology to the marketing context. The human personality framework known as the 'Big Five' [i.e. extraversion (energy or enthusiasm), agreeableness (altruism or affection), consciousness (control or constraint), neuroticism (negative affectivity, or nervousness) and openness to experience (originality or open mindedness)] by John and Srivastava (1999) has been used as a viable metaphor for understanding consumers' perceptions on brand images or in describing brand characteristics. Here, brands are investigated for different meanings conveyed by personality traits (Caprara, Barbaranelli and Guido 2001).

Aaker (1997:347) defined the brand personality as 'the set of human characteristics associated with a brand'. For example, Absolute Vodka is described as cool, hip, contemporary, twenty five year old whereas Stoli as intellectual, conservative, older man. In this conceptualisation, brand and human personality appear similar although the two constructs vary in their antecedents and the distinct objectives they serve, because brands are inanimate objects and do not behave in a consistent manner and the human personality structure is universal and brand personality is culture specific (Bosnjak and Hufschmidt 2007). Therefore, more appropriately, Azoulay and Kapferer (2003:151) defined brand personality as 'the set of human personality traits that are both applicable to and relevant for brands'. As Plummer (1985) stated, consumers assess brands by personality traits communicated through marketing communication programs and sometimes consider their cars, dogs and computers as family members or friends by imbuing human personality characteristics through anthropomorphism. In other words, humans anthropomorphize objects to facilitate interactions with the nonmaterial world by developing relationships with brands on the symbolic value where the brand then becomes alive and no longer a passive subject in the consumer's mind (Fournier 1998).

Importantly, brand personality is connected in consumer memory due to numerous brand features associated with a brand (Rekom et al. 2006). Consumers have naive theories that causally link different characteristics of the brand in forming associations. When consumers perceived brand characteristics are related to each other, these causal relations form a network of associations around the brand. In this network, some characteristics are more important than others as there are a large number of characteristics associated with a brand

(Rekom et al. 2006). As an important aspect of brand image, consumers often perceive brand in terms of human characteristics and therefore brands are described in terms of their personality traits (Thakor and Kohli 1996), or the user components of the brand image that can be described in terms of imbued brand personality (Biel 1992). In Keller's (1993) brand association categorisation (attributes, benefits and attitudes), he described this component as brand personality. Freling and Forbes (2005a) considered the extrinsic component of the brand as brand personality that may influence product perceptions, as evaluating intrinsic product attributes is difficult. Extrinsic cues are product-related but not part of the physical product itself and consumers are likely to rely on information about a brand's personality as a surrogate for intrinsic product attributes which can be treated as attitudes or characterisations (Keller 1993; Plummer 2000). Hence, it is clear that the brand personality characteristics are another aspect of brand image and can be stored in consumer memory for future decision-making (Aaker 1996; Keller 1993; Biel 1992). Explicitly, these brand personality characteristics are conceptual or abstract information about brands without episodic details and therefore can be considered as SM-related rather than AM-related.

### 2.6.3 Nostalgic experiences

In addition to the brand's physical attributes and personality characteristics, if brands are associated with nostalgic experiences in the past, these experiences and brands may be stored in consumer memory. Thus, it is important to investigate nostalgic experiences and their influence on future decision-making. The word nostalgia is derived from two Greek roots: 'nostos' meaning to return to one's native land and 'algos' referring to 'pain', suffering, or grief (Daniels

1985). Holbrook and Schindler (1991: 330) defines nostalgia as 'a preference (general liking, positive attitude, or favourable affect) toward objects (people, places, or things) that were more common (popular, fashionable, or widely circulated) when one was younger (in early adulthood, in adolescence, in childhood, or even before birth)'.

According to Holak and Havlena (1992), nostalgic experiences contain both pleasant and unpleasant emotional components. This 'bittersweet' quality of the emotion is a distinguishing characteristic of the nostalgic condition. In terms of time, it refers back to an earlier period in an individual's life, ranging from ten to seventy years, and draws on biased or selective recall of past experiences. Until recently, most of the findings of nostalgia were based on anecdotal evidence or individual case histories rather than on large empirical studies. Davis (1979) presents a view of nostalgia as a mechanism that permits people to maintain their identity in the face of major transitions that serve as discontinuities in the life cycle (e.g. the identity change from childhood to pubescence, from adolescence to adulthood , from single to married life, from spouse to parent etc). Thus, the tendency to engage in nostalgic feelings varies over the course of the individual lifetime. Importantly Davis (1979) distinguishes among three orders or selves of nostalgic experiences. First order or simple nostalgia is associated with simple, unquestioning belief that 'things were better in the past'. Second order or reflective nostalgia involves a critical analysis of the past rather than sentimentalization of it. Finally, in third order or interpreted nostalgia, the individual analyses the nostalgic experience itself.

Recurrent themes in the context of persons, objects, and events have been examined in nostalgia related studies; people included family, relatives and friends connected to past-experiences; objects such as photographs, paintings, piano, toys, clothing, jewellery, books and cars recall enjoyable events in the past, and events include holidays, birthdays, and cities that provide nostalgic experiences. These object and event- related experiences can be related to specific brands which consumers may have stored and remember in their memories. As noted by Havlena and Holak (1991), recently there has been an increased attention to nostalgic themes in advertising strategies and product management. Because nostalgia connects individuals, objects and events across time and place, such themes and emotions are relevant to communication providers or facilitators (telecommunications, greeting cards, photographs) which allow individuals to share life experiences at a particular point in time. For the reason that nostalgic memories are essentially event-related and affect-laden memories, they may be stored as episodes in consumer memories that can be more AM-related than SM when conceptualised as in different memory systems.

### 2.6.4 Brand heritage

A heritage brand is one with a positioning and a value proposition based on its heritage (Mats et al. 2007). For example, in the watch industry, both Patek Philippe and Tag Heuer are brands with heritage. However, Patek Philippe is considered as a heritage brand because it has chosen to emphasise its history as a key component of its brand identity and positioning, but this is not true of Tag Heuer. Thus, we see the latter as a brand with a heritage, but not a heritage brand. To make heritage part of a brand's value proposition is a strategic

decision. Heritage brands constitute a distinct branding category, with its own set of defining criteria and a specific approach for effective management and leadership (Urde, Greyser and Balmer 2007).

There are five major elements to indicate whether and how much heritage is presented or potentially found in a brand; a dimension of a brand's identity found in its record of accomplishment, longevity, core values, and use of symbols and particularly in an organisational belief that its history is important (Mats et al. 2007). The track- record indicates the demonstrated performance or proof that the company over time has lived up to its values and promises. Companies such as Johnson & Johnson (supported by its organisationally powerful credo), Volvo (continuously synonymous with safety), Coutts and Co. (centuries-old banking expertise) and Nordstrom (consistently strong service ethic) create and confirm expectations about future behaviour to different stakeholder groups. Thus, accumulated credibility and trust are typically part of a heritage brand. Longevity alone does not necessarily constitute in a heritage brand, but it can be a key element. This can be especially true for large multi-generational family-owned corporations such as S C Johnson, Ford and Anheuser Busch where 'the family name is on the door'. Although most heritage brands have been operating for many years, it is possible for a company to qualify as a heritage brand within a generation or two. For some companies, continuity and consistency of core values underlie and help define corporate strategy and become part of the heritage. The telecom company LM Ericsson honours three core values: professionalism, respect and perseverance. CEO Carl-Henric Svanberg comments upon perseverance: 'In 129 years Ericsson have never left

a customer, and we have never left a market' (Ericsson internal document 2006).

Meaningful use of symbols in communication is another dimension of heritage brands. We find such symbols in the form of logos and design 'looks' (e.g. Tiffany Blue, Bang and Olufsen design, Burberry pattern). For brands with high quality, these symbols sometimes achieve an identity of their own and stand for the brand. The five rings of the Olympics and the Mercedes star are two examples of this. These symbols have acquired a deeper meaning. In some companies, history is important to identity, who and what they are. For heritage brands, the history influences how they operate today and choices for the future. Simms and Trott (2006) posited that brand heritage is an important driver of consumer brand perception and image. For example, they have shown the BMW mini reflects the era of the 1960's, with a British origin. Such brands with brand heritage may also be stored in either AM as episodes or SM as facts depending upon the nature of experience with the brand, and may influence consumer future decision-making.

## 2.7 Conceptualising Brand-Related Autobiographical Memories (BRAM) and Brand-Related Semantic Memories (BRSM)

As discussed in the sections above, brand associations can be derived through brand benefits, brand personality characteristics, nostalgia or brand heritage in the consumer mind. These brand associations can be stored in consumer memory in two ways as per the conceptualisation of AM and SM. Consumers may only 'know' about the brand. In other words, consumers may be aware that a brand exists in the marketplace and may be knowledgeable about its

attributes, benefits and characteristics through their brand experiences. These associations are primarily factual or abstract information that would be stored in the semantic memory as episodic content of such information has not been processed and stored in the SM. These brand memories can be conceptualised as Brand-Related Semantic Memories (BRSM). In parallel, brand-related personal experiences such as nostalgic experiences may be stored as episodes in AM with contextual and affective details, which are conceptualised as Brand-Related Autobiographical memories (BRAM).

These BRAM may be particularly pertinent to consumer decision-making for a number of qualities and functions discussed in the Sections 2.2.2 and 2.2.3. The three functions of AM; self, social and directive function, significantly influential to one's daily life endeavours and therefore stored in AM may equally affect one's brand consumption decisions. Thus, integrating this conceptualisation into brand-related memory studies is critical to an understanding of consumer learning and decision-making processes (Mantonakis, Whittlesea and Yoon 2008). Furthermore, when AM are retrieved, consumers often pay less attention to semantic information such as product attributes and other product evaluation attributes (Baumgartner, Sujan and Bettman 1992), and the continued calls for research on emotional brand relationships (Marketing Science Institute 2008; Reed 2002; Fournier 1998) make an investigation of BRAM particularly timely.

Although the majority of studies do not explicitly conceptualise memory into the semantic and autobiographical systems, Table 2-4 clearly demonstrates the dominance of memory studies in consumer research based on factual information about brand decisions, signifying that consumer research has

previously focused on brand-related semantic memory. From the perspective of memory-based decisions, these decisions derived from recalling BRSM deal with cognitive –based conceptual knowledge whereas BRAM may deal with emotional dimensions and self-relevance in decision-making situations. Despite the pre-dominance of brand-related semantic memory study (BRSM), by investigating the episodic and affect associated brand-related autobiographical memory (BRAM), we can extend our psychological understanding of memory systems into a consumer brand decision context addressing both rational and emotional decision making models.

## 2.8 Summary

This chapter discussed the importance of investigating memory in consumer behaviour by highlighting the multiplicity of memory systems in psychology and the importance of autobiographical memories in consumption decisions compared to semantic memories. The discussion concluded by conceptualising the concepts of Brand-related Autobiographical Memory (BRAM) and Brand-related Semantic Memory (BRSM). This conceptualisation provides the starting point for the development of the conceptual model, propositions and hypotheses articulated in Chapter 3. Table 2-6 (p. 66) provides a summary of key literature findings.

Table 2-6: Summary of key literature findings

<table>
<tr><th>Multiple Memory Systems</th><th>Autobiographical Memory (AM)</th><th>Brand Memories</th></tr>
<tr><td>Sensory Memory<br>↓<br>Short-term Memory<br>↓<br>Long-term Memory<br>Non-declarative Declarative<br><br><table><tr><th>Semantic</th><th>Autobiographical</th></tr><tr><td>Knowing</td><td>Remembering</td></tr><tr><td>Concepts and facts</td><td>Event episodes</td></tr><tr><td>Less self-related</td><td>Self-related</td></tr><tr><td>Emotions not important</td><td>Emotions important</td></tr></table></td><td>Structure of AM<br>Life Time Periods<br>↓<br>General Events<br>↓<br>Event Specific Knowledge<br><br>Qualities of AM<br>• Feeling of belongingness (Affect)<br>• Phenomenal re-experiencing (Vividness)<br>• Memory perspective (self-engagement)<br><br>Functions of AM<br>• Directive function<br>• Self-function<br>• Social function</td><td>Drivers of Brand Memory<br><br>• Brand Attributes: (Physical and Functional)<br><br>• Brand Personality Characteristics<br><br>• Nostalgic Experiences<br><br>• Brand Heritage</td></tr>
<tr><td colspan="3">Brand-related Autobiographical Memory (BRAM): Brand-related nostalgic experiences of significant lifetime events.<br>Brand-related Semantic Memory (BRSM): Experiences relevant to brand attributes and characteristics.</td></tr>
</table>

# Chapter 3 : CONCEPTUAL MODEL, PROPOSITIONS AND HYPOTHESIS DEVELOPMENT

## Consumer Brand Memories (BRAM, BRSM), and their influence on Self-Brand Congruence and Brand Commitment

## 3.0 Introduction

Chapter 2 conceptualised brand memories into two main categories, BRAM and BRSM. The literature in consumer research is limited in identifying consequences of brand information storage and retrieval in AM in comparison to SM; therefore, this chapter focuses on consequences of BRAM and BRSM towards future brand-related decision-making. It develops a conceptual model of the nomological relationships between these two types of brand memory constructs (BRAM and BRSM), self-brand congruence and brand commitment, and develops relevant propositions and hypothesised relationships between these constructs. Two main research objectives are addressed in this chapter and they are given below.

1. To conceptualise whether and how brands are stored and retrieved from autobiographical and semantic memory, and whether the psychological and physiological differentiation of these brand memory systems can be validated.
2. To conceptualise and validate the nomological network of relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

This chapter is organised around these two research objectives in two main sections; section one investigates how BRAM are stored in consumer memory while the second section conceptualises nomological relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

## 3.1 How do consumers store BRAM and BRSM?

In Chapter 2 (Section 2.7), BRAM was conceptualised as brand-related personal experiences stored as episodes in the consumer's mind, whilst BRSM was conceptualised as the abstract brand knowledge stored in consumer memory because of consumer brand experiences. The primary distinction between these conceptualisations is based on the differences between AM and SM. To validate these two conceptualisations, the SM and AM concepts are further investigated through physiological, psychological and sociological perspectives in proposing relevant propositions discussed in following sections.

### 3.1.1 Difference between SM and AM

As discussed in Chapter 2 (Section 2.3), one's experience is remembered in AM in an episodic nature whereas in SM, one 'knows' about an event (Tulving 1983, 1985). AM can be traced back in time, tightly specific to their original context, time, and place (Tulving and Markowitsch 1998) whereas such information is not available with semantic memories. Thus, when one recalls information from AM and makes judgements, the outcome may be different from the judgements made by recalling SM due to the information intensity and affect associated with AM in comparison to SM. A synopsis of these differences (based on Table 2-3 in Chapter 2) is presented in Table 3-1 (p.69).

Table 3-1: Differences between AM and SM

| | **AM** | **SM** |
|---|---|---|
| 1 | Results in recall and recognition. (Remembering) | Results in perception and identification. (Knowing) |
| 2 | Retrieval of event episodes. | Retrieval of concepts and facts. |
| 3 | Essentially self-related. | Essentially not self-related. |
| 4 | Emotions play an important role in evaluating events. | Emotions do not play an important role in evaluating events. |
| 5 | Influence on strength and quality of one's identity. | Do not influence one's identity. |
| 6 | Influence social functions such as relationship development and maintenance. | Do not influence relationship development and maintenance. |
| 7 | Helps to generate SM. | Does not help to generate AM. |

There is physiological evidence of differences in information processing in AM and SM. The advent of functional neuroimaging methods has widened the scope of brain investigations ( Welzer and Markowitsch 2005) and studies implemented through fMRI in psychology have identified the brain regions associated with AM as the middle temporal and temporopolar areas, and the dorsal prefrontal cortex (Steinvorth, Corkin and Halgren 2006; Graham et al. 2003; Maguire, Vargha-Khadem, and Mishkin 2001). Recent work has demonstrated that semantic knowledge involves a dynamic interaction between storage of conceptual information (content) and active manipulation of this knowledge in service of a task (process) (Koenig and Grossman 2007; Martin and Chao 2001). This semantic information processing is associated with activity in the lateral prefrontal cortex connected with the medial temporal lobe and posterior association cortices (Kuchinke, Meer and Krueger 2009; Denkova 2006). The hippocampus and medial temporal lobe activation relates to both AM and SM (Manns, Hopkins and Squire 2003). Markowitsch (1998) suggested that the

recollection of old personal events depends on a right-sided network formed by the ventrolateral prefrontal and temporopolar cortices, while posterior areas store the multimodal representations, namely visual images, sounds, smells, and other sensory components associated with one's life experiences (Denkova 2006). The following Figure 3-1 displays Brodmann areas in the human brain, and based on Table 3-2, AM activation areas are located in 21, 38 and 9 (circled in red) while SM areas are in 25 and 23 (circled in blue).

Figure 3-1: Brodmann areas related to AM and SM

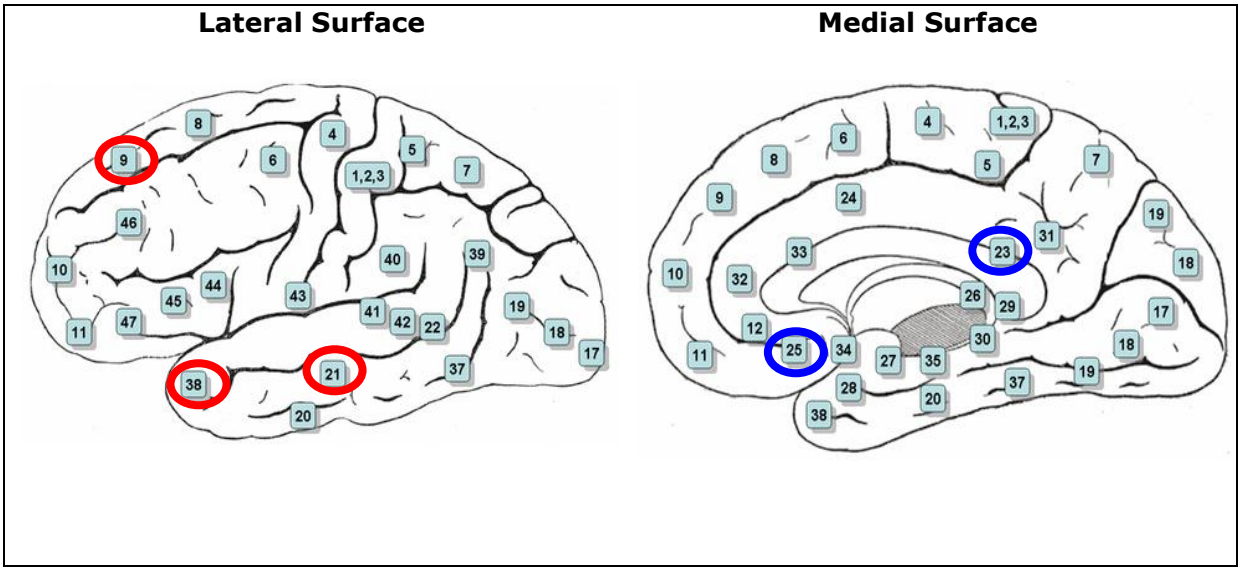



Table 3-2: Brodmann areas related to AM and SM

| AM | Area | SM | Area |
|---|---|---|---|
| Middle temporal areas | 21 | Lateral prefrontal cortex | 25 |
| Temporopolar areas | 38 | posterior association cortices | 23 |
| Dorsal prefrontal cortex | 9 | | |

Thus, physiologically, we are able to identify and differentiate AM and SM. Based on this conceptualisation, one may posit that brand information may be stored differentially in one or both of two memory systems; BRSM and BRAM,

and that this distinction will be expressed physiologically in different brain regions: brand-related affective-laden episodes in regions associated with AM activation, and factual brand knowledge in regions associated with the areas of SM activation. Whilst an individual may not have an AM associated with a particular SM, if the individual has a BRAM, they are likely to have some BRSM, although this will be suppressed due to the precedence of affect associated with AM (Baumgartner, Sujan and Bettman 1992). Importantly, AM is not isolated from the other cognitive systems, and interacts with emotion and influences semantic memory (Denkova 2006).

With the above differences between AM and SM, SM stores, processes, and retrieves conceptual abstract brand knowledge relevant for decision making while AM stores, processes, and retrieves episodic information that is self-relevant and subjectively framed. Importantly when AMs are retrieved, consumers often pay less attention to semantic information such as product attributes and other product evaluation attributes (Baumgartner, Sujan and Bettman 1992) and consumers are more responsive to advertisements that contain autobiographic referencing (Krugman 1965). AM may be particularly pertinent to consumer decision making for a number of reasons. At the core of episodic memory, three functions of AM are significantly influential to one's daily life endeavours (Alea and Bluck 2003) and thus may equally affect one's brand consumption decisions. Thus, integrating AM into brand-related memory studies is critical to an understanding of consumer learning and decision-making processes in addition to the SM (Mantonakis, Whittlesea and Yoon 2008), leading to the proposition below.

*Proposition 1: Brand-related memories will be predominantly represented in either AM or SM.*

### 3.1.2 Self-relevance of BRAM

The self-relevance of AM is the most significant feature that separates AM from other types of memory systems (Brewer 1986). Conway and Tacchi (1996) and Robinson (1986) have posited that AM and the self are essentially related. Personal memories of this nature affect current life satisfaction as memories have the capacity to affect people's emotions and satisfaction levels. This reflects the fact that life satisfaction improves when people recall pleasant memories and the opposite results when they remember unpleasant events (Wilson 2000; Tversky and Griffin 1991) supporting Wilson and Ross's (2003) argument of the reciprocal relationship between AM and self-identity. Importantly, AM retrieval is more related to goal-related categories (goals, needs, and desires) than general taxonomies (Singer and Salovey 1993; Conway 1990) and this state of affairs demonstrates the self-relevance of AM. Similarly, people process information as narratives and communicate stories of their autobiographical memories to satisfy motives and goals (Baumeister and Newman 1994; Conway 1990).

According to Conway, Singer and Tagini (2004), AMs are distinct for three main reasons: they 1. contain episodic memories; 2. contain self- knowledge; and 3. are the result of goal processing. Because AM consists of self-relevant knowledge, when AM are retrieved, it may be very likely that self-relevant areas of the brain will be activated in comparison to SM. Conway and Pleydell-Pearce (2000) in defining self-memory systems (SMS) posited a relationship of AM to

the self, whereas this relationship has not been evidenced in SM. In the same vein, Crane, Barnhofer and Williams (2007) discovered that information retrieval from AM was greater in self-relevant cues. Also neuroscientific studies suggest that AM appears to be selectively engaged in tasks that involve self-referential processing operations (Johnson et al. 2002; Kelley et al. 2002; Gusnard et al. 2001;Craik et al. 1999) in the areas of prefrontal cortex, particularly medial prefrontal cortex (Macrae et al. 2004). Therefore, it is suggested that BRAM retrieval results in activation of self-construal areas of the brain, and hence the following proposition is derived:

*Proposition 2: Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM.*

### 3.1.3 Affect associated with BRAM

Neuro-imaging studies have discovered areas of activation upon people's feeling and emotions. Different degrees of emotional weighting are allocated to different areas and systems in the tissues of the brain. The structures mostly and directly concerned with processing strongly emotional information are in the regions of the limbic cortex and ventromedial prefrontal area (Markowitsch et al. 2003; Markowitsch 1998; Fink et al. 1996). Greene et al. (2001) and Maddock (1999) discovered areas such as medial frontal gyrus, posterior cingulate gyrus and angular gyrus are significantly associated with emotion. Adolphs et al. (2000) investigated the activation areas for emotions such as sadness, happiness, anger or fear, and these activations are evidenced in the areas of left insula, right posterior cingulated area and the left cingulated area, although the activation pattern is remarkably distinct between sadness and happiness. In the study of

Keightley et al. (2003), brain activity associated with the emotional processing of faces and pictures occurred in brain regions such as amygdala, insula, prefrontal cortex and anterior cingulate, consistent with various emotional processing paradigms. As AM stores affect- laden memories about lifetime events, it is expected that when BRAM are recalled, areas associated to the emotional response are activated in the brain, and therefore the following proposition is reached:

*Proposition 3: Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM.*

### 3.1.4 Specificity, Vividness and Affect of BRAM

In order to operationalise the concept of BRAM, studies related to AM in psychology, sociology and marketing were investigated. Although not explicitly stated, the majority of studies have investigated the contextual information or Specificity associated with AM (Woike, Mcleod and Goggin 2003; Williams, Healy and Ellis 1999 etc). Thus, Specificity can be operationalised as a dimension of AM, while some studies have implicitly focused on emotions associated with AM (Skowronski, Walker and Betz 2003; Baumgartner, Sujan and Bettman 1992) and the ability to imagine (i.e. vividness) (Westmacott and Moscovitch 2003; Rybash and Monaghan 1999). Thus, as derived from studies shown in Table 3-3 (p. 75), this study identifies and operationalises Specificity, Vividness and Affect as dimensions of BRAM.

Table 3-3: Operationalisation of AM

| **Author** | **Objective** | **Methodology** | **AM Dimensions: Specificity** | **AM Dimensions: Vividness** | **AM Dimensions: Affect** |
|---|---|---|---|---|---|
| Williams, Healy and Ellis 1999 | The role of imagery in recollection of AM | Four experiments 24 psychology undergraduates | What happened<br>Date<br>Place | √ | Pleasant/ Unpleasant |
| Baumgartner, Sujan and Bettman 1992 | What kind of AM are evoked by music | Experiment<br>73 marketing undergraduates | Events (romantic relationships, vacations, commute with friends) | √ | Pleasant/ unpleasant<br>Favourable/ unfavourable<br>Vividness |
| Woike, Mcleod and Goggin 2003 | How implicit and explicit motives influence the accessibility of AM knowledge at different levels of specificity | Two Experiments<br>115 psychology undergraduates | Lifetime periods<br>General events<br>Event specific knowledge | X | X |
| Addis and Tippett 2004 | Relationship between AM and Identity | Interview<br>20 AD participants<br>20 healthy individuals | Personal semantic schedule<br>Personal facts over three life time periods; childhood, | X | X |

| | | | | | |
|---|---|---|---|---|---|
| | | | early adult life and recent adult life; personal incidental memory | | |
| Fradera and Ward 2006 | The role of reconstructive processes of autobiographical context in establishing the date memories | Two experiments<br>24 young people<br>16 elderly People | Placing events in time<br>Lifetime periods<br>General events<br>Event specific knowledge | X | X |
| Westmacott and Moscovitch 2003 | The importance of Autobiographical significance in representation and organisation of semantic memory and whether SM should distinguish from familiarity. | Experiment<br>25 men and 25 women | X | √ | √ |
| Rybash and Monaghan 1999 | Episodic and semantic contribution to two salient features of | Experiment<br>40 men | X | √ | X |

| | | | | | |
|---|---|---|---|---|---|
| | older adults' AM recall | | | | |
| Skowronski, Walker and Betz 2003 | An examination of time in AM | The diary method<br>29 females<br>20 men | √ | X | Emotion |
| Sujan, Bettman and Baumgartner 1993 | The role of AM on information processing | Two experiments<br>90 undergraduate students | X | √ | Emotion |
| Anderson and Conway 1993 | The structure of AM | Five experiments<br>25 people<br>37 people | General abstract knowledge<br>Intermediate knowledge<br>Specific events | X | X |

### 3.1.5 Specificity: contextual information of BRAM

Specificity as identified by Table 3-3 is an important factor as one may remember specific information about an event or experience in AM in comparison to SM. The influence of situation on product consumption behaviour has been evidenced in studies for decades (Xue 2008) and a number of studies evidenced the influence of situational variables on consumer behaviour (Xue 2008; Lai 1991; Srivastava 1980). Three types of situations are relevant to marketing strategy: the communication situation, the purchase situation, and the consumption situation (Lai 1991). In the marketing literature, the consumption situation refers to 'the anticipated usage situation for a product' (Lai 1991: 55). Belk (1974, 1975) first reported five specific situational variables influencing consumer behaviour, namely: physical surroundings, social surroundings, temporal perspective, task definition and antecedent states. These five variables are discussed below in detail to understand the influence of contextual details on consumer behaviour.

Physical surroundings refer to geographical and institutional location, decor, sounds, aromas, lighting, weather and visible configurations of merchandise or other material surrounding the stimulus object. Social surroundings include the presence of other persons, their characteristics, apparent roles and interpersonal reactions. Temporal perspective is a dimension of situations that may be specified in units ranging from time of day to season of the year. Task definition refers to the features of situations, such as an intent or requirement to select, shop for or obtain information about a general or specific purchase. Finally, antecedent states are momentary moods or conditions of buying such as acute anxiety, pleasantness, hostility, cash in hand, fatigue and illness. When brands

are associated with these usage situations, they may be stored in consumer memory, particularly contextual details in the AM and may influence future buying decisions.

An understanding of retrieval processes is crucial for any analysis of memory-based judgements when contextual details are concerned. Any factor that affects the accessibility or retrievability of information will influence the input that is considered in decision-making. According to memory researchers, information stored in memory must be retrieved before it can be considered in making judgements. In this retrieval process, the distinction between 'availability' and 'accessibility' is important (Tulving and Pearlstone 1966) although information is fully comprehended, and encoded into long-term memory. However, only a small portion of the vast quantities of information we learn is 'accessible' at any given time. In other words, we are only capable of retrieving a fraction of the total information we have available depending on two factors; 1.the amount of competing information that has also been learned in the same 'content domain' and 2. the self-generated and externally generated retrieval cues present at the time. For example, many people may know the name of their first grade teacher and have that information available. However, people learn thousands of names by the time they become adults and adults may not be able to retrieve or spontaneously recall the name of their first grade teacher due to the large number of competing responses. Thus, with external retrieval cues (e.g. if shown old photographs or told the names of other old teachers or classmates) people are more likely to retrieve the name. On the other hand, internal retrieval cues also help significantly in this process. If people pause to reminisce about their old school and continue to think about their teacher and classmates, they

are more likely to retrieve the name and other information. This circumstance may be particularly relevant for BRAM, because, when a person is exposed to a brand and when that brand has been related to any of their lifetime memory events in the past, they may recall the event details and will process information different from a brand not related to any significant memory events. In general, any information that a person fully comprehends and encodes into long-term memory will be available from that point onwards, but it will be accessible only in a limited set of circumstances. This argument also supports the SCAPE (Selective Construction and Preservation of Experience) framework proposed by Whittlesea (1997), which is an evolutionary debate in the memory paradigm. SCAPE suggests that memory construction (i.e. production and evaluation) is subject to the task, situation or context in which it happened.

Thus, BRAM episodes stored in consumer AM may essentially comprise contextual information (known as 'Specificity' in the study from this point forward) and therefore Specificity is operationally defined as recalling contextual information related to brand- related personal memory (BRAM) reconstructed through a hierarchical retrieval process including when, where, and how this has happened.

### 3.1.6 Vividness: perceptual information of BRAM

As shown in Table 3-1, Vividness can be seen as an important element of AM studies, and this section discusses how Vividness can be operationalized in BRAM. Mental imagery has received considerable attention in consumer behaviour research (Macinnis and Price 1987) and marketing communications literature suggests that highly vivid message presentations enhance persuasion

(Mathews 1994). As Lutz and Lutz (1978) posit, imagery-eliciting stimuli in advertisements have a positive effect on memory for product relevant information when the brand name and product attribute were unified in a picture. Macinnis and Price (1987) posited that interactive images create strong memory that facilitates retrieval. Fortin and Dholakia (2005) also found a significant effect of vividness on attitudes and behavioural intentions of web based advertisements. Millar, Hadjimarcou and Miciak's (2000) formulation and validation of a multidimensional scale to measure the properties of advertisement-evoked mental imagery also evidences the influence of Vividness on brands.

Thus, Vividness is conceptualised as the mental reconstruction of brand- related personal memory (BRAM) in visual, tactual, auditory, gustatory, and olfactory senses.

### 3.1.7 Affect of BRAM

Indications of the relevance of emotions can be found in all theories of memory. Evaluation of past events from memory depends on both their emotional connotation and valence (Filipp 1995). Damasio (1999:57) makes a distinction between primary emotions (innate, pre-organised) and secondary ones. Damasio (1999) claims that the secondary emotions are moulded socially and culturally in three aspects: in the perception of any stimulus that evokes an emotional reaction, in the form of any emotional expression and in the cognitions that follow upon experiencing an emotion. Arguably, BRAM is more likely to be linked with the third type.

This AM-associated affect is posited as a significant predictor of consumer behaviour (Skowronski, Walker and Betz 2003; Berntsen and Rubin 2002). Baumgartner, Sujan and Bettman (1992) examined the affect of AM on brand evaluation and claimed that when AM retrieval increases, product information results in higher levels of feelings, and reduced analysis of product attributes by forming a direct link between the brand and the personal memory, and that the affective nature of AM strongly influences brand judgements. Similarly, Baumgartner, Sujan and Bettman (1992) confirmed that affective AM retrieval reduces product information analysis. White (1982) and Wagenaar (1986) also confirmed the importance of emotion in AM when receiving unexpected gifts and visits. The affective nature of memories have been linked to personal strivings and attainment or non-attainment of them (Moffitt and Singer 1994; Singer 1990) and this affect can be investigated not only for valence (positive or negative), but also for the intensity of the affective tone. Therefore, the affect is an important element that influences one's consumption decisions through past emotional experiences stored and recalled from AM. Hence, the affect in the study is referred to as reconstruction of feelings, mood or emotions experienced in BRAM and/or brand.

Considering the above dimensions, it is determined that the construct of BRAM is essentially manifested through these elements in comparison to the BRSM, and the following proposition is derived:

*Proposition 4: Specificity, Vividness and Affect are reflective of BRAM.*

## 3.2 Relationship between BRAM, BRSM, self-brand congruence and affective brand commitment

The following sections conceptualise the relationship between BRAM attributes, BRSM, self-brand congruence and affective brand commitment in order to develop a conceptual model and formulate various hypotheses tested in the study.

### 3.2.1 The relationship between BRAM attributes and BRSM

Learning and memory in people rely on several memory systems, and as Poldrack et al. (2001) posited, these memory systems may compete with each other during classification learning. Thus, AM and SM memory systems do not operate in isolation, but rather interact with each other in certain information-processing tasks.

Although Baddeley, Eysenck, and Anderson (2009) emphasised that personal experiences are influenced by facts, concepts, and knowledge stored in our semantic memory, investigations on AM and SM in psychology have posited that autobiographical experience contributes to the content and the organisation of semantic memory (Westmacott et al. 2004; Westmacott and Moscovitch 2003; Snowden, Griffiths and Neary 1996).

Snowden, Griffiths and Neary (1994, 1995, 1996) first investigated this scenario. They observed that knowledge linked to individual experiential memories remains relatively preserved in patients with semantic dementia. For example, patients understood places and names that had personal relevance better than other places and names. Based on this fact, the authors hypothesised that

concepts relating to patients' experience might be available because of their link to preserve autobiographical memory (Graham et al. 2003; Snowden, Griffiths and Neary 1999). This finding point toward the possibility that some knowledge considered as 'purely' semantic in nature might also have an episodic component. However, in recent studies Westmacott and Moscovitch (2003) and Westmacott et al. (2004) have evidenced that autobiographical experience contributes to the content and the organisation of semantic memory.

Westmacott and Moscovitch (2003) investigated the influence of autobiographical significance on semantic memory in healthy subjects using the Remember/Knowledge paradigm to access real-life memories through a laboratory memory test. Subjects made R/K judgements about famous people (famous names), where R (response) corresponded to famous persons associated with specific autobiographical memory and K (knowledge) corresponded to celebrities about whom the subject possesses only semantic information without any personal significance. In other words, a subject gave an R response if s/he associated a specific personally experienced episode with the famous person in addition to generic, factual knowledge (e.g. I know that Princess Diana was a member of the British Royal family and I also remember I was in hospital when I heard of her death because I had broken my leg the same day). By contrast, a K response is given if an individual knows the identity but s/he cannot recall any autobiographical event associated with the celebrity (e. g. I know that Francois Mitterrand was a French president who had cancer, but I do not associate any personal event with him). Based on the subjects' responses, Westmacott and Moscovitch (2003) constructed two lists of famous names: 1. a list of high-R names, i.e. famous names that had received R

reponses from at least 80% of the subjects, and 2. a list of low-R names, i.e. famous names that had received R responses from fewer than 20% of the subjects. Consequently, those lists were used in two semantic and two episodic 'laboratory' memory tests (i.e. fame judgement, speeded reading, free recall and delayed recognition).

These results provide evidence that autobiographical significance has an effect on the way in which knowledge is represented and accessed from long-term memory (Westmacott and Moscovitch 2003). Westmacott et al. (2004) also examined the influence of autobiographical significance and the results revealed that autobiographically significant knowledge assumes a distinct status in the long-term memory, because it encompasses a personally relevant episodic component in addition to the semantic aspect. Importantly, AM is not isolated from the other cognitive systems and it interacts with emotion and influences semantic memory.

Thus, AM may be projected as an antecedent of SM, and this inference can be made on brand consumption memories because BRAM and BRSM are essentially stored and retrieved from AM and SM. In this respect, recalling through BRAM with contextual, perceptual and emotional details may have greater information in decision-making than recalling through BRSM. Thus, by applying the evidence that SM information is derived through AM, brand-related memories can be stored in either in BRSM or BRAM predominantly and if the memory is BRAM, it will also increase BRSM. Thus, the following hypothesis is derived:

*H1: BRAM positively affects BRSM.*

### 3.2.2 Relationship between BRAM attributes, BRSM and self-brand congruence

BRAM has been conceptualised as brand-related episodes of consumer brand experiences stored in consumer AM while BRSM is conceptualised as brand knowledge or abstract information relevant to brand experiences stored in SM. Prior to establishing the relationships between BRAM and self-congruence, a detail discussion of the theories of self-concept and self-brand congruence is given below.

#### 3.2.2.1 Importance of brands in achieving self-concept motives

In broad terms, Shavelson, Hubner and Stanton (1976) defined self-concept as a person's perception of him/herself inferred from his or her responses to situations. They also identified seven key features of self-concept; organised, multifaceted, hierarchical, stable, developmental, evaluative and differentiable.

According to Bearden, Netemeyer and Teel (1989), social influence plays a major influential role in the consumption process. The social impact theory proposed by Latane (1981) identified the impact of social presence resulting from three forces, size (how many people are present), immediacy (proximity) and strength (importance) that have strong impact on the consumption context. When social presence is large in size, close in proximity and high in importance, the influence is greater, and therefore, symbolic goods direct and set expectations for self-enhancement in two ways; by private matching of self-concept and public recognition of symbols. Thus, symbolic meanings of products and brands are important for consumers in achieving these self- concept motives through a self–brand congruence relationship. The self- brand congruence

results when a brand satisfies one's self motives and social identity. Aaker (1999) admitted self as a malleable construct that differs from situation to situation. Therefore, people act differently and are influenced by their social roles and cues, having a need for self-presentation complying with different situations. Therefore, the self- expressive use of brands is paramount.

The self–brand congruence relationship results in satisfying consumer self-concept motives: self-consistency and self-enhancement. As Aaker (1999) stated, self-congruency takes place to express the self-schema. This can be done in two ways; the need for consistency and positivity. The need for consistency arises for things that are predictable, familiar, stable, and uncertainty reducing. Positive affects such as pride or pleasure are expected to be expressed as personality traits that constitute a person's positive self-schema, and an inability to express them often associate with negative effect. These two lead to increase self-esteem and aid self-presentation. Banister and Hogg (2004) examined young adults and their fashion choices, and found that self-esteem was the most important motivational driver for their behaviour to accept or reject brands based on their symbolic attributes.

People's motivation to establish and maintain a personal and unique identity distinct from that of others is known as 'autonomy seeking'. Here, they are motivated towards individual accomplishments, distinctiveness, uniqueness, independence, self-control, or other aspects of individual integrity (Schultz, Kleine and Kernan 1989). Alternatively, when they maintain interpersonal connections or are affiliation-seeking, possessions or brands they have reflect connections with others, heritage or tradition, or important occasions with others

(Schultz, Kleine and Kernan 1989). These motivations can be linked to self-consistency and self esteem as consumers seek to accomplish their goals.

Levy (1959) posited that products and brands people buy possess personal and social meanings in addition to their functions and all commercial objects have a symbolic character. Brands act as symbols of personal accomplishment, provide self- esteem, allow one to differentiate oneself and express individuality, and help one through life transitions. In the process of using brands to construct self identity, the set of brand associations may become linked to the consumer's mental representation of self (Krugman 1965), and it has three conditions to distinguish as a communication vehicle; visibility in use, variability in use and personlizability. For a product to have personality associations, it has to be purchased and/or consumed conspicuously or visibly. Variability in use is important because without variability, no differences among individuals can be inferred based on product use. The personalizability of products denotes the extent to which the use of a product can be attributed to a stereotypical image of the generalised use (Holman 1981).

Among the diverse set of brand image drivers, Plummer (2000) claims that the brand personality characteristics play a key role in the 'for me' choice. Keller (1993) and Fennis and Prun (2007) stated that the brand personality tends to serve the symbolic or the self-expressive function for consumers. Having looked at all information and communications, consumers decide whether brand suits them or not by directly relating the perceived brand image to their self -concept (Plummer 2000). Lau and Phau (2007) posited two reasons as to why consumers enjoy symbolic meanings associated with brands; to portray the self

that they want to express and to develop relations dyads with brands that may project a certain personality consumers expect, and to reinforce self concept motivation such as self-esteem and self-worth through brands.

In the same vein, possessions symbolically extend self (for example, a uniform or a trophy allows us to convince ourselves that we can be different), and contributes to one's capabilities for doing and being (Belk 1988), giving rise to self-creation and maintenance. In other words, possessions are a convenient means of storing past memories and feelings, such as a souvenir for travel experience, a historic monument to create a nation's past and heirlooms for heritage. Importantly possessions can be used to satisfy psychological needs, such as to actively create one's self concept, reinforce and express the self-identity, allowing one to differentiate oneself and assert one's self as significantly different from others (Kliene et al.1995; Belk 1988). Escalas and Bettman (2003) and Fournier (1998) further extended their investigation of these attributes of possessions to brands because consumers construct self-identity through their brands based on the congruency between brand-user associations and self-image associations (Escalas and Bettman 2003).

#### 3.2.2.2 BRAM attributes and self-brand congruence

It is evidenced from the above discussion that brands play a significant role in satisfying self-concept motives such as self-consistency, self-enhancement and social-identity. This is achieved through forming a self-brand congruence relationship or matching one's self-traits and characteristics of brands.

The self- relevance of AM is the most significant feature that separates AM from other types of memory systems (Brewer 1986). Conway and Tacchi (1996) and Robinson (1986) have also posited that AM and the self are essentially related. When affect-laden personal memories are recalled, it affects current life satisfaction as memories have the capacity to affect people's emotions and satisfaction levels. This reflects the findings that life satisfaction improves when people recall pleasant memories and the opposite results when they remember unpleasant events (Wilson 2000; Tversky and Griffin 1991). Similarly, Wilson and Ross (2003) argued a reciprocal relationship between AM and self-identity. Importantly, AM retrieval is more related to goal-related categories (goals, needs and desires) than general taxonomies (Singer and Salovey 1993; Conway 1990) and therefore people process information as narratives and communicate stories of their AM to satisfy the motives of goals (Baumeister and Newman 1994; Conway 1990). Besides this, AM is the centre of identity and contains memories of experiences that act as the foundation for the self-concept (Bruner 2003; Baddelely 1986; Neisser 1981) and contains information about brands/products and the meanings they have added to consumers' lives (Olsen 1995;Hebridge 1988). Baumeister and Newman (1994) explained that people's efforts to understand their experiences often take the form of constructing narratives (stories out of them) and they identified the motivations that guide people to structure their autobiographical memory narratives to satisfy goals and achieve fulfilment.

Therefore, when brands are associated with such memories, and match individuals' self-concepts or self-images (i.e. the totality of their thoughts and

feelings having reference to the self as an object (Alphert and Kamins 1995), consumers may have a positive relationship with the BRAM and the self-concept. The self- image congruence theory suggests that self- matching product cues and images generally activate a self-schema (Escalas and Bettman 2005; Escalas 2004; Sirgy 1982). Therefore, when the specific, vivid and emotional nature of AM has strong self-image congruence, these brand memories may positively relate to one's self-concept upon BRAM retrieval and the opposite may result for weakly congruent brands. However, due to the nature and quality of SM, BRSM may not consist of self-relevant information in consumers' brand memories and may not influence the self-concept. Thus, BRSM may not contribute towards self-brand congruence as much as BRAM and therefore the following hypothesis is derived:

*H2: Variance in self-brand congruence is explained more by BRAM than BRSM.*

### 3.2.3 Relationship between BRAM attributes, BRSM and brand commitment

Before conceptualising the relationship between BRAM and brand commitment, it is important to distinguish between the concepts of commitment and loyalty because until recently, commitment has been thought of as brand loyalty at the brand level (Martin and Goodell 1991) and represents one of the most researched areas in consumer behaviour (Utpal 1997).

#### 3.2.3.1 Brand loyalty and commitment

The concept of loyalty can be conceptualised using three approaches. In the early literature (1950s and 1960s), conceptualisations and measurements of brand loyalty were based on the pattern of past purchases (Lawrence and Trapey 1975; McConnell 1968; Turker 1964; Brown 1952) and it was defined as a consumers' repetitive and systematic purchasing behaviour in relation to a given brand. Given the controversy caused by this vision of brand loyalty, several researchers have subscribed to a perspective that emphasises consumer attitude. In this second approach, researchers assume that loyalty should be interpreted primarily as an attitude toward a given brand (Knox and Walker 2001; Mellens, Dekimpe and Steenkamp 1996; Reichheld 1996; Jacoby and Chesnut 1978; Day 1969). Thus, a combination of the two previous approaches has generated the most widely accepted definition of brand loyalty among marketing researchers put forward by Jacoby (1971), and Jacoby and Kyner (1973:2). They define brand loyalty as "an effective buying behaviour of a particular brand, repeated over time, and reinforced with a strong commitment to that brand". This composite approach captures the true complex nature of loyalty and incorporates a behavioural and an attitudinal component (Dick and Basu 1994). The integration of commitment in the brand loyalty literature contributes to a better understanding of this phenomenon and spreads its definition beyond its behavioural aspect (Samuelson and Sandivik 1997).

The concept of brand commitment relates to the consumer loyalty toward a particular brand in a product class, and this relationship is gaining increasing importance in consumer behaviour (Martin and Goodell 1991). Until recently conceptualisations of commitment in marketing regarded brand commitment as

the same as loyalty and defined it in terms of the consistency of purchasing a specific brand (Engel and Blackwell 1982). Following from sociology, brand commitment was viewed as a consistent line of behaviour by an individual, maintained even when faced with alternative or competing behaviour choices (Becker 1960). Thus, brand commitment was viewed only as a behavioural phenomenon and defined as "the proportion of total purchases within a given product category devoted to the most frequently purchased brand" (Jacoby and Chesnut 1978: 35). However, in recent years this concept was criticised as a narrow viewpoint that failed to consider the reasons underlying the frequency of brand purchase. Warrington and Shim (2000) posited that although brand commitment and brand loyalty are closely related, they are two different concepts, the distinction being based on behavioural and attitudinal attributes. Brand commitment reflects the degree to which a brand is firmly fixed as the only acceptable choice within such a product class while the brand loyalty is viewed from a behavioural perspective (Assael 1998). That is, repeated purchase of a single brand over time is assumed to reflect brand loyalty where consumers reduce their buying effort and simplify decision- making. Importantly in the absence of a preferred brand, brand loyal consumers may switch to an alternative brand whereas in brand commitment, consumers may not (Warrington and Shim 2000). Although loyalty and commitment are related, they are conceptually different as loyalty is a behavioural and attitudinal construct, whereas commitment is primarily an attitude (Belaid and Behi 2011). Investigations into the brand commitment relationship have found that commitment plays a central role in predicting brand loyalty.

#### 3.2.3.2 BRAM and brand commitment

As discussed above, the concept of brand commitment is important in the decision –making context as it includes both a behavioural dimension (consistency of purchase) and an attitudinal dimension in contrast to the one dimensional nature of repeat purchase behaviour, which is often used to characterise brand loyalty (Utpal 1997). Marketing theory focuses on determinants of long-term relationships by defining the key construct of brand commitment (Belaid and Behi 2011; Fullerton 2003; Morgan and Hunt 1994) and investigates its impact on brand equity and business performance. In the brand context, commitment is defined as 'the consumer's strong willingness to maintain a lasting relationship with the brand or as the implicit or explicit intention to maintain a durable relationship from the consumer standpoint' (Dholakia 1997; Morgan and Hunt 1994). Lastovicka and Gardner (1977) define brand commitment as an emotional or psychological attachment to a brand within a product class.

Literature identifies two distinct types of commitment: calculative or continuance versus attitudinal or affective commitment (Fullerton 2003; Gruen, Summers and Acito 2000; Pritchard, Havitz and Howard 1999; Allen and Meyer 1990). In other words, one is cognitive while the other is affective as it expresses emotional ties (Belaid and Behi 2011). These definitions expanded the scope by including the attitudinal aspects of the construct. Using this perspective, emphasis was placed on both cognitive and affective components of the construct. Thus, the measurement is based on purchase intentions and purchase preference rather than actual purchase.

Amine (1998: 309) defines calculative commitment as "maintaining consistent purchasing behaviour as long as the benefits attached to the brand exceed the costs of switching to another brand". Importantly calculative commitment refers to the intent to continue the relationship, often motivated by perceived risk, high switching costs and scarce alternatives (Evanschitzky et al. 2006; Amine 1998; Bendapudi and Berry 1997).

On the other hand, affective commitment refers to an enduring desire to maintain a relationship with a brand based on a psychological attachment (Bansal, Irving and Taylor 2004; Morgan and Hunt 1994; Moorman, Zaltman and Deshpande 1992). From a consumer's standpoint, affective commitment refers to their devotion and their identification with the brand without any material consideration (Belaid and Behi 2011). Fullerton (2003) claims that affective commitment is a more powerful determinant of consumer retention than continuance commitment. Through a meta-analysis, Meyer et al. (2002) also suggested that affective commitment has stronger and more favourable correlations with organization-relevant outcomes, compared to continuance commitment.

Assuming that attachment is a strong feeling that unites the consumer and the brand depending on purchase purchasing situations, it constitutes a barrier to brand switching and a pledge to consumer loyalty. This issue shows that the affection developed by the consumer towards the brand appears as a fixation with the choice and the purchase of this brand (Sierra and McQuitty 2005). This brand attachment in memory can be considered as a component of affective commitment (Amine 1998; Aaker 1997; McQueen, Foley and Deighton 1993).

This affective commitment can be more relevant in BRAM than BRSM because, as a personified entity, the brand may contribute to an affect-laden evaluation by consumers and a strong feeling of affiliation based on their positive lifetime events can be can be stored in AM. Therefore, the following hypotheses are formulated.

*H3a : BRAM positively affects brand commitment*

*H3b : Variance in affective brand commitment is explained more by BRAM than BRSM.*

### 3.2.4 Relationship between consumer self-brand congruence and affective brand commitment

As posited by Sirgy (1986), self-congruity theory suggests that people choose to purchase and use goods and services that have a user image consistent with their own self-image. Doing this allows consumers to reinforce their own personal identity and their own self-concept (Sirgy et al. 2008). When brands and their perceived brand images satisfy consumer self–concept motives, a self-brand congruity relationship is formed and very often consumers may use to purchase and consume these brands. Batra and Homer (2004) investigated the self-reinforcement by ad endorsers for two brand image beliefs concerning fun and sophistication. They found that brand image beliefs have a greater impact on brand preferences when they fit consumer schemas in the consumption situation about the benefits received, and when consumers have high social and impression needs. Freling and Forbes (2005a, 2005b) examined the effect of brand personality on different performance outcomes using experimental research. Their findings evidenced that stimulus material containing information

about a product's physical attributes and its brand personality is associated with higher brand attitudes and purchase intentions. Kleine, Kleine and Allen (1995) posited that a good understanding of this congruence relationship could be obtained by observing people's ordinary activity patterns, which include purchase related decisions.

Similarly, studies related to self-brand congruence evidence positive consumer behavioural consequences such as brand attitude (Moor and Homer 2007; Escalas 2004; Graeff 1996), positive brand evaluation (Usaki and Baloglu 2011; Quester, Karunaratne and Goh 2000; Hog, Cox and Keeling 2000;Graeff 1996), brand preference (Kassarjian 1971; Escalas 2004; Jamal and Goode 2001), satisfaction (Ekinci and Riley 2003; Jamal and Goode 2001), repurchase and brand loyalty (Sirgy et al.2008;Kressmann et al. 2006). A summary of these studies is shown in Table 3-2 (p. 98), and it is evident from these studies that brand loyalty is a predictor of self-brand congruence although brand commitment has not been investigated as a consequence of self-brand congruence.

Table 3-4: Behavioural consequences of self-brand congruence (SBC)

| **Author and Year** | **Objective of the study** | **Brand Attitude** | **Positive Evaluation** | **Brand Preference** | **Satisfaction** | **Repurchase** | **Brand Loyalty** |
|---|---|---|---|---|---|---|---|
| Jamal and Goode 2001 | Consumers and Brands : a study of the impact of self-image congruence on brand preference and satisfaction | - | - | √ | √ | - | - |
| Ekinci and Riley 2003 | The relationship between self-brand congruence and consumer satisfaction. | - | - | - | √ | √ | - |
| Kressmann et al. 2006 | Direct and indirect effects of self-image congruence on brand loyalty. | - | - | - | - | - | √ |
| Escalas 2004 | Self-brand congruence and social identity. | √ | - | √ | - | - | - |
| Moor and Homer 2007 | Self-brand connections and brand attitude. | √ | - | - | - | - | - |
| Kassarjian 1971 | The relationship between the self-brand congruence and product ownership | - | √ | √ | - | - | - |
| Graeff 1996 | Using promotional messages to manage the effects of brand and self-image on brand evaluations | √ | √ | - | - | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hog, Cox and Keeling 2000 | The impact of self-monitoring on image congruence and product/brand evaluation | - | √ | - | - | - | - |
| Quester, Karunaratne and Goh 2000 | Self-congruity and product evaluation : a cross cultural study | - | √ | - | - | - | - |
| Usakli and Baloglu 2011 | Brand personality of tourist destinations: An application of self-congruity theory | - | √ | - | - | - | - |
| Sirgy et al.2008 | Effect of self-congruity with sponsorship on brand loyalty | - | - | - | - | - | √ |

However, companies are increasingly searching for ways to create strong emotional brand connections with consumers (Malar et al. 2011) because such connections increase their financial performance (Park et al. 2010). Chaplin and John (2005) and Park et al. (2010) have posited that self-congruence plays a significant role in creating emotional brand attachment, and therefore can enhance affective and behavioural consumer responses (Grohmann 2009; Aaker 1999). Some theoretical arguments further support the influence of self-brand congruence on emotional brand commitment. Cognitive consistency theories suggest consistent behaviour of people to avoid feelings of tension and unpleasantness resulting from inconsistencies (Festinger 1957; Heider 1946) so that consumers may be motivated and act in a more consistent way in purchasing and using brands that reinforce their self-concept. Also the self-expansion theory (Aron et al. 2005) supports the relationship between self-brand congruence and affective brand commitment, because when brands and possessions are part of their self-definition, consumers have a closer attachment towards those brands, particularly when consumers view the brand as being part of themselves and reflecting who they are (Park et al. 2010).

Importantly this emotional commitment results when brands tie to 'affectively laden memories' (Park and MacInnis 2006:17), evoking or symbolizing nostalgic experiences, eras, people, places, or memories (Grisaffe and Nguyen 2011; Holbrook 2006; Schindler and Holbrook 2003 ) and therefore BRAM can be considered as an antecedent state of self-brand congruence, that may lead towards affective brand commitment. In particular, the emphasis here is on the psychological or affective commitment towards brands recollected in AM in comparison to the SM. Thus, when BRAM matches the self-concept, a self-brand

connection is created and consumers may have an affective commitment towards those brands. Studies related to brand commitment have found that a commitment to repurchase is driven by a strong positive affect toward the brand (Dick and Basu 1994; Jacoby and Chestnut 1978) and Oliver (1999) described the strongest form of this commitment as inherently emotional, although this area has not been investigated in depth. This study, therefore, aimed to examine this relationship and the following hypothesis is derived.

*H4: Self-brand congruence positively influences affective brand commitment.*

It was observed that positive behavioural consequences of self-brand congruence mentioned above have an impact on affective commitment. Although these aspects are not investigated empirically in the study, it is important to highlight these relationships in the conceptualisation to have a complete delineation of constructs closely related to self-brand congruence and affective brand commitment. In the consumer behaviour literature, there is unequivocal evidence in support of a positive association between customer satisfaction and affective brand commitment (Caceres and Paparoidamis 2007; Abdul-Muhmin 2005; Garbarino and Johnson 1999; Amine 1998) while literature has also identified brand attitude as an antecedent of affective brand commitment (Priester et al. 2004; Garbarino and Johnson 1999). These relationships are mapped in the proposed conceptual model on page 103.

## 3.3 Summary

Based on the conceptual review, this chapter aimed at identifying relevant propositions and hypothesised relationship relevant to BRAM and BRSM, and developing a conceptual model. The propositions, hypotheses and the conceptual model (Figure 3-2, p. 103) developed in the study are summarised below;

Propositions

P1 Brand-related memories will be predominantly represented in either AM or SM.

P2 Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM.

P3 Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM.

P4 Specificity, vividness and affect are reflective of BRAM.

Hypotheses

H1 BRAM positively affects BRSM.

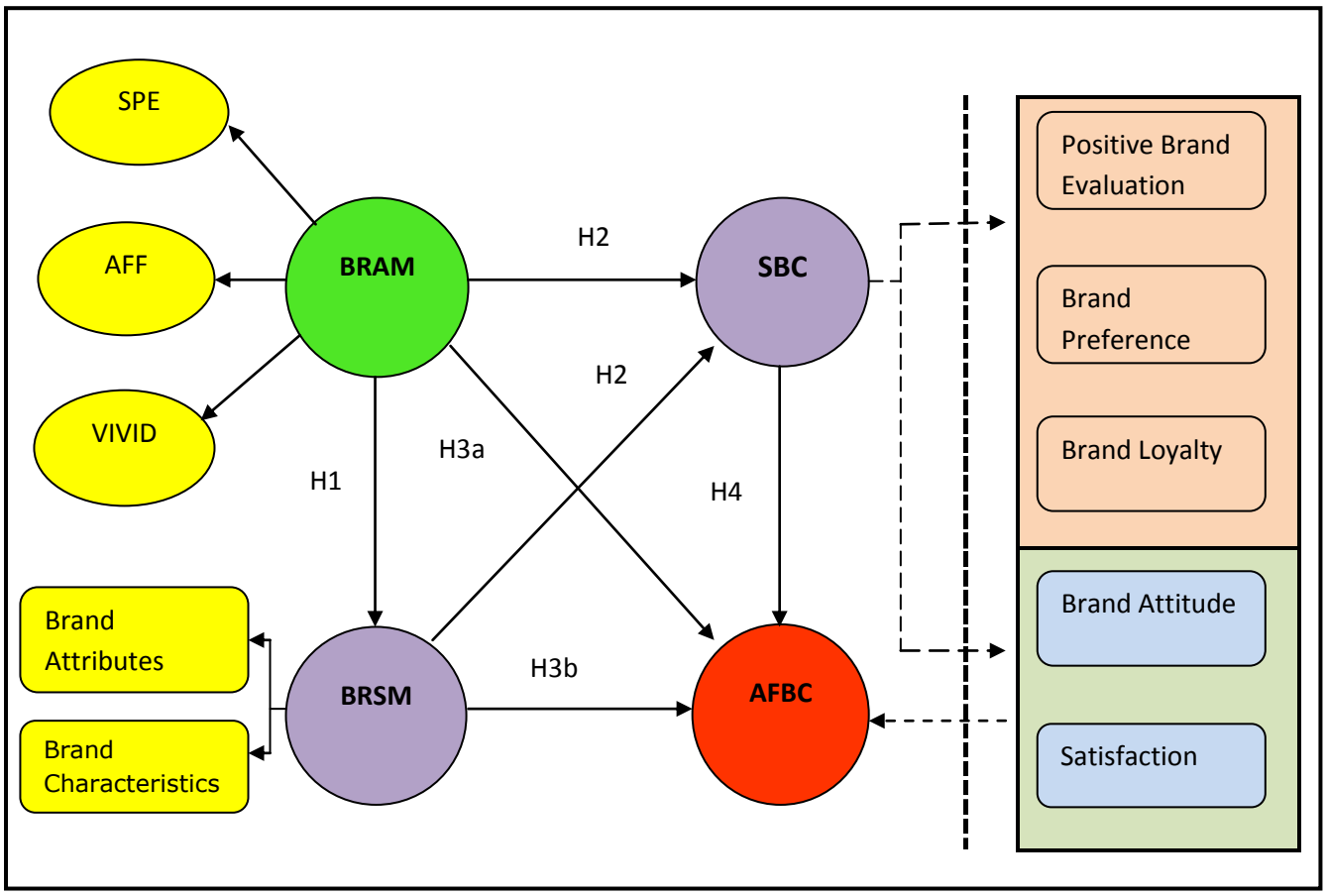
H2 Variance in self-brand congruence is explained more by BRAM than BRSM.

H3a BRAM positively affects brand commitment.

H3b Variance in affective brand commitment is explained more by BRAM than BRSM.

H4 Self-brand congruence positively influences affective brand commitment.

Figure 3-2: Conceptual Model: The relationship between BRAM, BRSM, SBC and AFBC



# Chapter 4 : METHODOLOGY

# Research Approach and Data Collection Strategy

## 4.0 Introduction

Chapter 3 developed a conceptual model between BRAM, BRSM, self-brand congruence and affective brand commitment, by identifying different propositions and hypotheses measured in the study. These propositions and hypotheses are re-produced in Table 4-1 below.

Table 4-1: Propositions and hypotheses proposed to be measured in the study

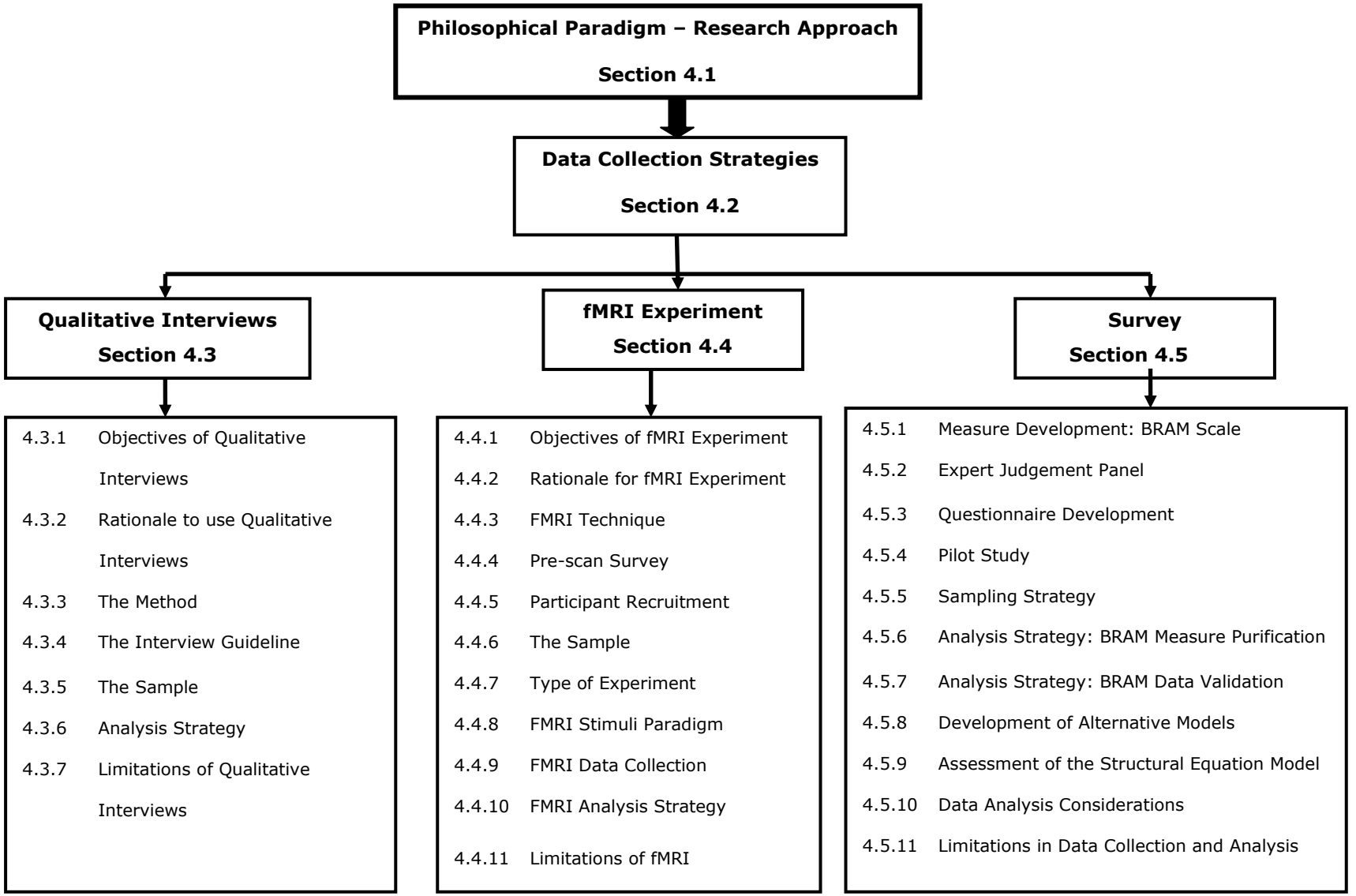
| Propositions | |
|---|---|
| P1 | Brand-related memories will be predominantly represented in either AM or SM. |
| P2 | Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM. |
| P3 | Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM. |
| P4 | Specificity, vividness and affect are reflective of BRAM. |
| Hypotheses | |
| H1 | BRAM positively affects BRSM. |
| H2 | Variance in self-brand congruence is explained more by BRAM than BRSM. |
| H3a | BRAM positively affects brand commitment. |
| H3b | Variance in affective brand commitment is explained more by BRAM than BRSM. |
| H4 | Self-brand congruence positively influences affective brand commitment. |

This chapter discusses the methodology used to test the above propositions and hypotheses. Mainly this chapter consists of two Sections; Section 1 covers the philosophical paradigm of the research approach followed in the study while section two covers a detailed discussion of the three main data collection strategies; qualitative interviews, fMRI (Functional Magnetic Resonance Imaging) experiment and a survey. Figure 4-1 (p. 106) depicts the organisation of this chapter.

## 4.1 Philosophical paradigm

The relationship between theory and methodology is important because researchers need to use methodologies that are consistent with the assumptions and aims of the theoretical view being expressed (Gephart 2004). A paradigm is described as a holistic approach underlying a research methodology (Kassim 2001). According to Kuhn (1970), there are two broad research paradigms in marketing. The dominant paradigm is called the empiricist, objectivist or positivist view of knowledge, which attempts to apply the methods and principles of the natural science model to the study of consumer behaviour (Hunt 1993; Ehrenberg 1988). The alternative paradigm is referred to as the interpretivist, subjectivist or social constructionist view. This approach defines consumer research as a way of interpreting the inter-subjective meanings through which consumers view the world (Buttle 1994; Peter and Olson 1989).

Figure 4-1: Methodology Chapter organisation



These two paradigms are distinguished in terms of the philosophical assumptions, theories, goals and methods each bring to the marketing management process. Marsden and Littler (1996) took a market-oriented evaluative framework on these two paradigms. They examined the relationship between the underlying assumptions of positivism and social constructionism, and five key marketing principles: marketing research, consumer behaviour theory, product development and marketing communications. According to them, the common characteristics of positivism are experimental, reductionistic, explaining, nomothetic, objective, quantitative, variables and hard while characteristics associated with social constructionism is descriptive, holistic, understanding, idiographic, subjective, language based and soft. In a more comprehensive manner, Gephart (2004) simplified three perspectives used in management research as per Table 4-2 (p. 108).

It is extremely important to identify the philosophical paradigm as the whole research process (i.e. arriving at research questions, developing the methodology, interpreting data and reporting key findings) varies based on the philosophical stance the researcher undertakes. Among three philosophical paradigms co-existing for a research inquiry, this study is conducted within the positivist paradigm.

Table 4-2: Three research paradigms in management

| | | POSITIVISM | INTERPRETIVISM | CRITICAL THEORY/ POSTMODERNISM |
|---|---|---|---|---|
| 1. | **Assumption** | Objective world which science can 'mirror' with privileged knowledge. | Inter-subjective world which science can represent with concepts of concepts of actors; social construction of reality. | Material world of structured contradictions and/or exploitation, that can be objectively known only by removing tacit ideological biases. |
| 2. | **Key focus or ideas** | Search for contextual and organizational variables which cause organizational actions. | Search for patterns of meaning. | Search for disguised contradictions hidden by ideology; open spaces for previously silenced voices. |
| 3. | **Key theories in paradigm** | Contingency theory; systems theory; population ecology; transaction cost economics of organizing; dustbowl empiricism. | Symbolic interaction; ethnomethodology; phenomenology; hermeneutics. | Marxism; critical theory; 'radical' perspectives<br>PM: poststructuralism; postmodernism; deconstructionism; semiotics |
| 4. | **Key figures** | Lorsch and Lawrence; Hannan and Freeman; Oliver Williamson. | Goffman; Garfinkel, Schutz; Van Maanen, David Silverman. | Marx; Habermas, Offe |
| 5. | **Goal of paradigm** | Uncover truth and facts as quantitatively specified relations among variables. | Describe meanings, understand members' definitions of the situation, examines how objective realities are produced. | Uncover hidden interests; expose contractions; enable more informed consciousness; displace ideology with scientific insights, change. |

| | | | | |
|---|---|---|---|---|
| 6. | **Nature of knowledge or form of theory** | Verified hypotheses involving valid, reliable and precisely measured variables. | Abstract descriptions of meanings and members = definitions of situations produced in natural contexts. | Structural or historical insights revealing contradictions. |
| 7. | **Criteria for assessing research** | Prediction=Explanation<br>Rigor; internal & external validity, reliability. | Trustworthiness<br>Authenticity | Theoretical consistency<br>Historical insights<br>Transcendent interpretations<br>Basis for action, change potential and mobilization. |
| 8. | **Unit of analysis** | The variable | Meaning; symbolic act | Contradictions, incidents of exploitation PM: the sign |
| 9. | **Research Methods and type(s) of analysis** | Experiments; questionnaires; secondary data analysis; quantitatively coded documents<br>Quantitative: regression; Likert scaling; structural equation modelling<br>Qualitative: grounded theory testing | Ethnography; participant observation; interviews; conversational analysis; grounded theory development<br>Case studies; conversational and textual analysis; expansion analysis | Field research, historical analysis, dialectical analysis PM: deconstruction, textual analysis |

*Adapted from Lincoln and Guba (2000), Gephart (1999), Guba and Lincoln (1994).*

### 4.1.1 Rationale for using the positivist approach

This research study captures a positivist approach and follows the hypothetico-deductive methodology due to a number of reasons. Positivism dominates in contemporary social science and consumer research (Hunt 2001); specifically consumer memory studies are significantly influenced by psychology where the scientific paradigm is the means of investigation. Previous research studies on consumer memories have predominantly been based on the scientific paradigm and contributed immensely to the discipline by investigating memory-related issues in consumption (e.g. Shipro and Spence 2002; Sanyal 1992; Lynch and Srull 1982). This study is interdisciplinary in nature relying on psychological and neuroscientific underpinnings that are purely based on scientific inquiries (e.g. Cowley 2006; Yoon et al. 2006; Plassmann et al. 2005; Deppe et al. 2005 McClure et al. 2004). Thus, scientific inquiry is more appropriate compared to an interpretive perspective. More importantly, the research questions raised through the literature review require a scientific approach where empirical knowledge is based on demonstrable objective facts, which are determined through a positivist approach confirming a scientific protocol for the discovery. General elements followed in the research approach confirm the positivist philosophy and they are discussed below.

- All research methods were quantitative and focused on making valid generalisations.
- The area of study and the method of study were purely determined by objective criteria rather than the researcher's own belief and interest.
- The aim of the study was to identify the causal explanations between BRAM, BRSM, self-brand congruence and brand commitment that explain consumption behaviour. In other words, the nature of the study was co-

relational and estimated the nature of the relationship between independent and dependent variables.

- The concepts were operationalised to measure them quantitatively.
- The role of the researcher was independent of the examination.

Thus, the hypothetico-deductive methodology approach was used in the study where deduction is the process by which a reasoned conclusion is arrived by logical generalization of a known (Sekaran 2003) that consists of seven steps: observation, primary information gathering, theory formulation, hypothesizing, further scientific data collection, data analysis and deduction.

## 4.2 Data collection strategies

One way to increase the validity, strength, and interpretative potential of a study, decrease investigator biases and provide multiple perspectives is to use methods involving triangulation (Denzin 1970). Triangulation is the combination of two or more data sources, investigators, methodological approaches, theoretical perspectives (Kimchi, Polivka and Stevenson 1991; Denzin 1970) or analytical methods (Kimchi, Polivka and Stevenson 1991) within the same study (Thurmond 2001: 253). These combinations result in data triangulation, investigator triangulation, methodological triangulation, theoretical triangulation, (Patton 1990; Denzin 1970) or analytical triangulation (Kimchi, Polivka and Stevenson 1991). This study employed methodological triangulation. Methodological triangulation has also been known as multi-method or methods triangulation (Barbour 1998; Greene and Caracelli 1997; Polit and Hungler 1995). By using multiple methods, the researcher attempts to decrease the deficiencies and biases that stem from any single method (Mitchell 1986:19) so

that it is possible to "counterbalance flaws and weaknesses of one method with the strengths of another" (p. 21). Among the two types of methodological triangulation (within-method triangulation and between- or across-method triangulation), this study made use of across-method triangulation with three data collection strategies; qualitative interviews, fMRI experiment and a survey to ensure rigor in data analysis. Giddings (2006: 196) stated that multi-methods enable the researcher to obtain "more evidence, more certainty, and therefore more confidence in the 'truth value' of the outcomes". Freling and Forbes (2005b) also posited that modern researchers endorse the use of methodological triangulation as it enables to obtain strong and valid conclusions through wider discovery and deeper understanding of an issue revealing different aspects of the empirical reality. Based on the positivist approach, both qualitative and quantitative data collection strategies were developed to address the research propositions and hypotheses developed in Chapter 3.

Table 4-3 (p. 113) outlines the three main data collection strategies used; qualitative interviews, fMRI experiment and survey (including expert judgement panel and pilot survey), used to test relevant propositions and hypotheses. The following Sections 4.3, 4.4 and 4.5 discuss these data collection methods in detail.

Table 4-3: Overview of data collection strategies and propositions/hypotheses tested

| | **Study** | **Overall Objective** | **Sample** | **Time scale** | **Tested Propositions and Hypothesis** |
|---|---|---|---|---|---|
| 1. | Qualitative Interviews - semi-structured (Section 4.3) | To discover whether and how BRAM exist in consumer psychological structures, and its behavioural implications. | 22 | 4 weeks (July 2009) | P1, P4 H3a, H3b |
| 2. | fMRI Experiment (Section 4.4) | To examine neural correlates of BRAM and BRSM and brand commitment implications. | 18 | 3 months (July – Sep. 2010) | P1, P2, P3 H3a, H3b (indicative) |
| 3. | Expert Judgement Panel (Section 4.5.1) | To select items to be included in developing the BRAM scale. | 6 | 2 weeks (Sept. 2009) | N/A |
| 4. | Pilot Study (Section 4.5.2) | To refine the survey questionnaire to be used in the main survey. | 75 | 2 weeks (April 2010) | N/A |
| 5. | Main Survey (Section 4.5.3) | To validate the BRAM scale. To examine relationships between BRAM, BRSM, self-brand congruence and affective brand commitment. | 304 | 3 months (Aug. – Oct. 2010) | P4 H1, H2, H3a, H3b and H4 |

## 4.3 Qualitative interviews

Interviews remain the most common method of data gathering in qualitative research and are variously referred to as depth, exploratory, semi-structured or unstructured (King and Horrocks 2010). As Kvale (1983) stated, qualitative research interviews are aimed at gathering descriptions about the research phenomena with the intention of interpreting meanings. Thus, the goal is to see the research topic from the perspective of the interviewee, and to understand how and why they come to have this particular perspective (King and Horrocks 2010). To achieve this purpose, qualitative research interviews generally have the characteristics of a low degree of structure imposed by the interviewer; a preponderance of open questions; and a focus on 'specific situations and action sequences in the world of the interviewee (Kvale 1983:176) rather than abstractions or general opinions. Accordingly, the objectives of using this method in the study are described in the following Section 4.3.1.

### 4.3.1 Objectives

The objectives of the qualitative interview were exploratory in nature and discovery-oriented. Research questions, propositions and hypotheses investigated through qualitative interviews are given in Table 4-4 (p.115).

Table 4-4: Research questions, propositions and hypotheses addressed through qualitative interviews

| | Research Question | Proposition/ Hypotheses |
|---|---|---|
| 1. | Do brands exist in consumer AM? | P1 |
| 2. | How do consumers remember brands in AM? | P4 |
| 3. | Do BRAM predict brand preferences, relationships and commitment? | H3 |

In addition to exploring and confirming the relevant research propositions and hypothesis, these questions were also aimed at identifying the brand stimuli for the fMRI experiment and items to be included in the BRAM scale development in addition to the items discovered by the literature review.

### 4.3.2 Rationale

Qualitative research can be conducted from a range of different epistemological positions (Cassell et al. 2006). Some who seek to quantify the outputs of their qualitative research may be working within a positivist paradigm (Prasad and Prasad 2002:6) and this is described as 'qualitative positivism' whereas others may focus on other possible epistemological positions, such as postmodernism, interpretivism, critical theory, and social constructionism (Gephart 1999).

McGregor (2007) posited that although the majority of work in consumer behaviour research is quantitative rather than being narrative or qualitative, it should also focus on qualitative dimensions such as meanings and understandings held by people and participant involvement. These aspects were

vital in the study because the objective of qualitative interviews was to explore more about brand-related memories in AM before proceeding to other empirical work.

Qualitative methods are important in understanding consumer behaviour as consumer decision-making is affected by both conscious and unconscious memories (Martin 2010). Because this technique provides opportunities for both emic and etic interpretations of the informant's lived experiences, qualitative interviews were implemented as the first phase of this investigation. Emic (self) reporting captures important insights on behaviour (Belk and Costa 1998; Arnould and Price 1993) while etic (researcher) interpretations through emic reporting allow researchers a rich method to capture the complexities and shades of experiences (Martin 2010). Thus qualitative interviews were particularly important for investigating consumer brand-related autobiographical memories through emic reporting of consumer lived experiences in addressing the research questions stated above.

Both Shank (1999) and Adaval and Wyer (1998) suggest that the best way to get the best information is by allowing people to explain about their experiences as they process and store information as narratives. To discover brand memories, interviewing was the best way to learn their brand-associated experiences before proceeding to a more structured approach. McCracken (1988) posited that direct questions are not best suited for understanding people's thinking. Thus, by adopting a semi-structured interview, informants were more relaxed in expressing their own thinking about brand memories.

Churchill and Iacobucci (2005), Laurent (2000) and Srnka and Koszegi (2007) recommend implementing qualitative interviews at the primary stage of a research study. Because the area of investigation was novel, qualitative interviews were conducted as the first phase of data collection with the objective of exploring research questions further. These interviews made it possible to build a robust argument and to plan further data collection strategies effectively. Essentially discovery-oriented project goals articulate the use of phenomenological interviewing over more structured approaches to inquiry (Fournier 1998). Thus, qualitative interviews (Miles and Huberman 1994) were implemented in the study because this method is more appropriate for orienting oneself to a new field (Morgan 1988:11) to gain deep insights on how consumers' lived personal experiences are remembered in their BRAM versus BRSM, and to establish brand connotations.

### 4.3.3 The method

Initially the Crovitz technique, the use of a list of cue words, has been used in psychology to examine AM (Kopelman, Wilson and Baddeley 1989). Due to the limitations associated with the cueing technique, Kopelman, Wilson and Baddeley (1989) constructed a semi-structured interview schedule to assess recall of autobiographical incidents across three broad time bands; childhood, early adult life and recent events, which has been widely used in later studies (Levine et al. 2002). Taking insights from this semi-structured schedule, a semi-structured interview was developed in the study to explore brand-related memories. Marschan-Piekkari and Welch (2004) and Patton (1990) posit that a semi-structured interview guide enables each respondent to adapt and explore

their answers in detail. McCracken (1989) also recommends loosely structured questions and probing follow up questions.

Having discovery-oriented objectives stated in Section 4.3.1, an interview schedule was developed to recall brand memories across three broad time bands; childhood, early adult life and recent events (Levine et al. 2002; (Kopelman, Wilson and Baddeley 1989), in order to conduct the interviews in a semi-structured manner. This semi-structured interview method facilitated constant probing to uncover important insights related to brand-memories.

### 4.3.4 The interview guideline

The interview guideline used in the semi-structured interviews is given in the Appendix 4.1, and all interviews were conducted following the guidelines of Kvale (1996). This guideline was designed to capture three types of complementary information: 1.a first person description of their brand- related personal memories during childhood, early adulthood and recent past.
2. contextual, perceptual and affective information associated with BRAM and
3. behavioural implications such as brand preferences, brand relationships and brand commitment.

In addition to prompted brand memories, where respondents were free to discuss any other brands they could remember, sixteen brands were selected to probe brand-related memories in the interview. Criteria used in selecting the brand stimuli for qualitative interviews were as follows:

- Brands that have been in the UK market for at least 10 years.
- Brands that represent both high and low involvement.

- Brands with heritage and nostalgia effect.

Respondents were asked to recall their strongest personal memories in the past and to describe any of these memories related to a brand. The aim was to discover whether brand experiences were recollected as episodes in AM or as abstract information in SM, and to explore different dimensions associated with AM.

### 4.3.5 The participants

Twenty-two qualitative interviews were conducted to explore brand representation in AM using a purposive, judgemental sampling approach to achieve variability across respondents in terms of gender, age, and educational background. The choice of interview setting was at the discretion of the informants in order to facilitate their convenience in talking through brand experiences. Twenty-two British nationals participated in the study and their demographic profile is given in Table 4-5 (p. 120). The participants selected include informants with diverse characteristics: gender, life situations, ethnicities, age groups, occupations and educational background. The gender sub-category addresses previous research suggesting that women exhibit stronger brand involvement (Sherrod 1989) and age, ethnicity and lifecycle variations allowed investigation in a diverse social context. The major criterion for selecting participants was that the participant had consumed a brand at any point of their lifetime and thus the demographic spread in participants does not have a significant impact on findings.

Table 4-5: Participant profile for qualitative interviews

| **Gender** | | **Ethnicity** | | **Age groups** | |
|---|---|---|---|---|---|
| Female | 13 | British –White | 12 | 20 -30 yrs | 13 |
| Male | 9 | British – Black | 2 | 31 – 45 yrs | 4 |
| | | British – Asian | 8 | 46 – 75 yrs | 5 |

A total of 25 hours and 35 minutes of interviews (Kvale 1996; Miles and Huberman 1994) were recorded and transcribed in the West Midlands. On average, informants were interviewed for between 35-90 minutes. All interviews were conducted by the author to ensure the consistency and holistic perspective required in the method.

### 4.3.6 Analysis strategy

A number of methods were employed to ensure rigor in analysis (Miles and Huberman 1994) and general procedures of grounded theory (Strauss and Corbin 1990) were followed. All the interviews were audio taped, and transcribed verbatim as soon as the interviews were completed (Silverman 2000). QSR NVIVO 8.0 was utilised to organise and manage the coding of the transcripts following a meaning condensation and categorisation approach (Kvale 1996). Although a structure was identified a priori, emergent themes were free to evolve and therefore the coding strategy was in- between an inductive and confirmatory approach.

The data analysis was carried out in two stages (Miles and Huberman 1994) by following common guidelines within each respondent separately and secondly a cross-case analysis.

Srnka and Koeszegi (2007) suggest starting with categories identified in the literature because it is useful in the process of categorising transcribed data (Weber 2004). An initial classification was developed based on the literature review (Brewer 2006). BRAMs were identified on hierarchical structure consisting lifetimes, general events and specific events. Then, BRAMs were categorised for different characteristics such as specificity, vividness and affect. Degree of specificity was determined based on criteria such as what happened, when, where and who were in involved. Affect associated with BRAMs was discovered in-terms of moods, emotions and feeling and the vividness was decided on whether respondents have the ability to imagine BRAMs. This process was done by using the selected coding procedure (Strauss and Corbin 1990). The second level of analysis investigated behavioural and psychological relationships between the characteristics of BRAM and brand commitment.

### 4.3.7 Limitations of qualitative interviews

Although interviews were designed carefully, there were some restrictions in implementing them. Only 22 informants were involved in the study, yet it was not equally representative of all age groups. It was observed that informants were not able to recall their early memories instantly at the time of interviewing. It is unavoidable that the interviewee may have had distorted information through recall error, selective perceptions and social desirability bias.

## 4.4 Functional Magnetic Resonance Imaging (fMRI) experiment

Section 4.3 above detailed research questions and propositions addressed through qualitative interviews. However, these interviews were inadequate in measuring all propositions and hypotheses developed in the study. Propositions 1, 2 and 3 prompted the use of a physiological approach in investigating brand-memories in consumers' minds and therefore, the fMRI experiment was chosen as the second empirical study. This section discusses the objectives, rationale, conduct and limitations of fMRI experiment. As an introductory approach to provide the rationale, an overview of neuromarketing, its importance in consumer research and different techniques used in neuromarketing is provided before detailing the rational for using fMRI in the study.

### 4.4.1 Objectives

The overall objective of the experiment was to examine neural correlates of brand memories in AM an SM, and three objectives listed below were aimed to be achieved through this experiment.

1. To investigate the neural response to brand related memory, whether brand related memory activates the regions of autobiographical memory and/ or the regions of semantic memory.
2. To investigate whether the brand related AM activates areas of emotional sensitivity and self- construal components.
3. To identify the link between neural response to brand memories and expressed behavioural preferences.

### 4.4.2 Rationale

As an approach to explain the rationale of employing fMRI, an overview of neuromarketing, its importance in consumer research and different techniques used in neuromarketing is provided in this section.

Neuromarketing is the application of neuroimaging techniques in marketing research (Oreja-Guevara 2009). Lee, Broderick and Chamberlain (2007) defined this concept as the application of neuroscientific methods to analyse and understand human behaviour in relation to markets and marketing exchanges. Because neuromarketing techniques are capable of obtaining objective information about inner workings of the brains of consumers (Murphy, Illes and Reiner 2008; Hubert and Kenning 2008), a more direct view and investigation of the consumer 'black box' or the stimulus–organism–response model can be obtained (Perrachione and Perrachione 2008; Hubert and Kenning 2008;Howard and Sheth 1969). These neuroimaging techniques are capable of recording the physiological correlates of human brain activity when consumers are exposed to marketing stimuli allowing researchers to observe how these brain activities drive subsequent consumer behaviour even if consumers are not consciously aware of the situation. These examinations permit an accurate understanding of brand memory activation in the consumer's brain in responding to marketing stimuli. Using neuromarketing techniques, physiological responses can be collected when respondents directly participate in behaviours that are difficult for participants to control, and hence more objective results can be obtained (Lee, Broderick and Chamberlain 2007) and this data will be free from interviewer or questionnaire bias and respondent confabulation (Page and Raymond 2007). Importantly, in situations where participants do not wish to express their

behaviour or when they genuinely do not have a conscious reason for their behaviour, these techniques are useful for obtaining the relevant records for analysing behavioural reactions (Boote and Mathews 1999).

There are two main categories of neuroimaging techniques depending on the measurement mechanism (Huesing, Jancke and Tag 2006); measuring electrical activity of the brain and measuring neural metabolism processes (Kandel, Schwartz and Jessel 2000). Electroencephalography (EEG) and magnetoencephalography (MEG) measure electrical activity while positron emission tomography (PET) and functional magnetic resonance tomography (fMRI) measure metabolic or hemodynamic responses to neural activity (Kenning, Plassmann and Ahlert 2007). The three main brain-imaging techniques currently used in neuromarketing are fMRI, MEG and EEG (Oreja-Guevara 2009). Extant neuroimaging studies within the marketing literature are summarised in Table 4-6 (p. 126).

Brain imaging methods such as fMRI are used in marketing for two major reasons (Ariely and Berns 2010). First, neuroimaging provides a more efficient trade-off between costs and benefits because consumers may not be able to articulate fully their preferences when asked to express them explicitly. These consumers may have hidden information about their true preferences that may eventually influence their buying behaviour. Therefore, the cost of performing fMRI would outweigh the benefit of improved product designs and increased sales. Second, it is assumed that neuroimaging data would give a more accurate indication of the underlying preferences than data from traditional market research techniques such as surveys or interviews by avoiding subjective biases

(Ariely and Berns 2010). These two reasons are particularly important in investigating memories mainly because consumers may not be able to express their memories explicitly due to the lapse of time between the memory event and the investigation, and may not be precisely accurate even if they recall early memories.

Table 4-6: Neuroimaging studies related to consumer behaviour

| **Neuroimaging Technique** | **Author/Year** | **Objective** | **Consumer Research Domain** |
|---|---|---|---|
| MEG | Ambler, Ioannides and Rose 2000 | How cognitive and affective advertisements elicit activity in different cortical centres. | Cognitive vs. affective processing of advertising |
| EEG | Rossiter et al. 2001 | How well ads are remembered from neural activation pattern. | Memory based advertising/brand decisions |
| | Young 2002 | Whether specific moments within ads are primarily responsible for brand development and attention. | Advertising processing and brand decisions |
| fMRI | Erk et al. 2002 | Neural representation of product attractiveness. | Information processing and decision making |
| | Senior 2003 | Brain areas associated with pleasure and rewards. | Cognitive vs affective information processing |
| | McClure et al. 2004 | Effect of brand information on the sensory perception of similar products (Coca Cola/Pepsi). | Information processing and brand decisions |
| | Deppe et al. 2005 | How individual economic decisions are influenced by implicit memory contributions. | Memory based brand decisions |
| | Plassmann et al. 2005 | Neural correlates of brand choice under risk. | Information processing and brand decisions |
| | Yoon et al. 2006 | Brand connections that resemble a social relationship. | Brand personality and relationships |

| | | | |
|---|---|---|---|
| | Schaefer et al. 2006 | Neural correlates of brand knowledge. | Memory based brand decisions |
| | Deppe et al. 2007 | Influence of the 'framing effect' on neural activation in case of intuitive decisions. | Information processing and decision making |
| | Kenning, Plassmann and Ahlert 2007 | Perceived attractiveness of an advertisement and associated specific neural activation. | Information processing of adverts |
| | Knutson et al. 2007 | Impact of price on product preferences and neural activity. | Information processing and decision making |
| | Plassman, Kenning and Ahlert 2007; Plassman,O'doherty and Rangel 2007; Plassmann et al. 2007 | Neural correlates of brand loyalty, willingness to pay and price changes. | Information processing and cognitive brand decisions |
| | Schaefer 2009 | The role of brands in establishing emotional bonds and the influence on people's economic behaviour and preference decisions. | Cognitive and emotional information processing and brand decisions |
| | Schaefer and Rotte 2010 | Investigate brands as cultural symbols. | Memory based brand decisions |

FMRI was first used in marketing in 2002 (Fisher, Chin and Klitzman 2010) and Table 4-6 shows those studies that have applied fMRI to brand-related studies in consumer research since 2002. FMRI is a powerful tool for understanding what happens in the brain when we see a brand (Schaefer 2009). Recent studies evidence the successful application of fMRI to investigate the neural correlates of brands in different cognitive responses; brands act as cultural symbols activate in the prefrontal cortex (Schaefer et al. 2006 ; McClure et al. 2004); reward-related brands in the ventral striatum (Erk et al. 2002); personally favourite brands in the dorsolateral prefrontal cortex (DLPFC) and hippocampi (McClure et al. 2004); behavioural preferences toward brands in the areas of ventrimedial prefrontal cortex(VMPFC) (McClure et al. 2004), and prestigious self-relevant brands in the area of the anterior medial prefrontal cortex (AMPFC) (Schaefer and Rotte 2006, 2007). These studies evidence the successful use of fMRI in investigating brand-related behaviour, and justify the use of this technique in the examination of BRAM and BRSM.

Table 4-6 further evinces the neuroimaging techniques used to investigate major areas in consumer research such as cognitive versus affective information processing and its influence on brand decisions, memory-based brand decisions and measuring advertising effectiveness. The majority of studies have utilised fMRI to investigate relevant consumer behavioural problems because of the distinctive advantages of fMRI against other neuroimaging techniques. The advantages include; the ability to obtain whole brain scans less than three seconds from a balance between temporal and spatial resolution; non-invasiveness permits repeated measurements with healthy participants; the choice of scanning parameters allows increasing one parameter at the expense

of the other; the ability to improve temporal resolution down to the level of 100-250 milliseconds (Huesing, Jancke and Tag 2006; Ogawa et al. 2000), and spatial resolution can be increased to the level of cortical columns as basic functional units of the cortex (Kenning, Plassmann and Ahlert 2007; Kim and Duong 2002).

As discussed above, investigations through fMRI may have more relevance than self-reported behaviour for the study of memory-based information processing and decision making related to brand choice, because fMRI is capable of uncovering what happens in the brain when exposed to different brands in comparison to other existing methods. Although there are a considerable number of consumer research studies focusing on information processing and memory, the majority of this work has centred on conscious mental manipulation (Lynch and Srull 1982). Yet, subconscious memory may have a strong influence on decision-making and it is important to consider in memory investigations. Therefore, fMRI experiments were chosen to implement in the study to investigate brand memories more meticulously.

Generally recall and recognition tests are common for accessing respondents' memories related to products/brand consumption and the success of these techniques purely depend on the respondent's ability and willingness to retrieve the information stored in his/her memory. The other common method is the experiment designed with task factors related to the study objectives. Although these experiments tend to be more robust and carefully designed, inferences can only be made on the conscious responses received from participants. On the contrary, through physiological observations such as eye tracking or galvanic

skin response (GSR), physiological responses can be collected directly and is difficult for subjects to control. Although these sophisticated techniques have been used to study behavioural responses relevant to products/brands, they are incapable of tracking what happens inside the brain during information processing and retrieval. Thus, fMRI investigations would potentially eliminate the above weaknesses currently experienced in consumer memory research. Thus, an fMRI experiment was conducted to investigate the brand-related memories associated in AM and SM.

### 4.4.3 Functional Magnetic Resonance Imaging (FMRI) experiment

FMRI measures several physiological functions, including changes in metabolism and metabolic by-products, blood flow, blood volume and blood oxygenation (Smith 2004). This is a powerful non-invasive tool used to study the functions of the brain by psychologists, psychiatrists and neurologists (Smith 2004). The most commonly used fMRI technique is called the 'BOLD-fMRI' (blood-oxygen-level dependent fMRI). This uses changes in blood oxygenation and differing magnetic properties of regional cerebral blood flow to detect the fMRI signal (Kwong et al. 1992; Ogawa et al.1992). Thus, fMRI can give a high quality visualization of the location of activity in the brain resulting from a sensory stimulation or a cognitive function (Smith 2004). The MR scanner uses a very large static magnetic field, (commonly 1.5 or 3 Tesla), smaller changeable magnetic fields, and pulses of radio waves to image the hydrogen atoms distributed throughout our bodies (e.g. in water). The scanner can easily differentiate between different types of tissues as the hydrogen atoms within these tissues behave differently in the magnetic field (Lee et al. 2009). This technique is rapidly becoming a widespread research tool due to the decreasing

cost of operation and its ability to offer an accurate glance inside the 'black box' of the brain, allowing us to examine the brain both at structural and functional levels (Miljkovic and Alcakovic 2010). Figure 4-2 below depicts a schematic diagram of a general functional MRI scanning with its different components.

Figure 4-2: Schematic diagram of a functional MRI scanning


*(Miyapuram 2008:38)*

### 4.4.4 Pre-scan survey

The experiment was planned in two phases: a pre-scanning survey and the fMRI experiment. This section discusses the pre-scan survey in detail. The pre-scan survey was implemented one month before commencing the fMRI experiment, and the objectives of the experiment were as follows:

1. To select the brand stimuli for the fMRI experiment.
2. To determine the face validity of the stimuli, in terms of the potential degree of AM and SM association.
3. To ascertain the memory intensity of AM and SM associated brands.

The pre-scan questionnaire used in the study consists of 4 sections (Please refer to Appendix 4.2 for the complete pre-scan questionnaire) and they are discussed below.

- **Section One** includes instructions on how to complete the questionnaire, with an example of a brand related personal memory. Mainly this section was devoted to elicit six respondent-identified AM associated brand memories, (named as uBRAM condition) with a 5-point likert scale indicating the degree of agreement of respondents with the statements related to BRAM conceptualisation (Blagov and Singer, 2004; Rubin, Schrauf and Greenberg, 2003), BRSM conceptualisation, brand attitude, purchase intention and brand commitment.
- **Section Two** elicited six respondent-identified brands that were AM-associated within three product categories: cars, clothing and personal care. These product categories were discovered as AM-associated product categories from the first phase of data collection (qualitative interviews), (named as pBRAM condition) with a 5-point likert scale indicating the degree of agreement of respondents with the statements related to BRAM conceptualisation, BRSM conceptualisation, brand attitude, purchase intention and brand commitment.
- **Section Three** included the top six brands (two brands from each of the three product categories stated above) in terms of market share (Brand

Index 2010) that were presented to respondents in each of the above three product categories representing different categories of Baumgartner's (2002) consumer personology cube, to identify SM association of consumer knowledge (named as BRSM condition). This section also included a 5-point likert scale indicating the degree of agreement with the statements related BRSM conceptualisation, brand attitude, purchase intention and brand commitment.

- **Section Four** included six low-penetration brand names based on the same product categories (non-UK brands) to control for brand awareness (named as NOME condition) together with a 5-point likert scale indicating the degree of agreement on BRSM, brand attitude, purchase intention and brand commitment.

Please refer to Appendix 4.3 for a complete description of scale items used in the pre-scan survey.

### 4.4.3 Participant recruitment

Participants were selected through the volunteer pool of Durham University's Psychology Department in three phases, and each stage is discussed below in detail.

*Stage 1*

Initially, an email was sent to all participants in the pool, inviting their participation for the study (please refer to Appendix 4.4). This email included a brief overview of the study, required documentation, timings and incentives for the participation.

*Stage 2*

Upon receiving participants' consent/expressed interest for the participation, the following documents were sent to each potential participant via email, to be completed and returned by the deadline (i.e. two weeks after sending the documents to potential participants).

1. Pre-scan questionnaire

As discussed in Section 4.4.4, potential participants were requested to complete the questionnaire by the deadline and the first 25 that responded with complete questionnaires were able to be taken forward for the fMRI scanning session.

2. Safety Questionnaire

Although any healthy participant within the sample characteristics was able to participate in the fMRI scanning session, it was a mandatory requirement that the potential participant was free from any health issues, to be involved in the fMRI scanning session. Thus, potential participants completed a detailed checklist of a safety screening questionnaire (Please refer to Appendix 4.5), and this procedure was strictly followed before selecting the final participants in the study.

3. Consent form

This is the written confirmation obtained from the participant that she/he understands the project, procedures and their agreement to participate in the study (Please refer to Appendix 4.6).

After a careful examination of the above documents (1 and 2), the final participants were selected for fMRI scanning sessions and appointments were booked at the Newcastle Magnetic Resonance Centre where the fMRI scans were conducted (please refer to Appendix 4.7 for the booking form).

*Stage 3*

Once participants were selected, appointments were booked, following documents were sent to them prior to one week of the fMRI appointment, followed by a telephone call to clear any doubts participants had before attending to the fMRI scan.

1. MR Information leaflet and appointment card

This is a standard document issued by the Newcastle Magnetic Resonance Centre (NMRC) including relevant information about MR (Magnetic resonance) such as what is MR, what happens during the scan, directions to the centre and appointment details (Please refer to Appendix 4.8).

2. BRAM Instruction leaflet

This document includes study-specific information such as arrival information, scanning time and instructions to follow before, during and after the scan (Please refer to Appendix 4.9).

### 4.4.6 The participants

Eighteen respondents participated in the study, and their demographic profile is given in Table 4-7 (p. 136). Participants had to be at least 18 years old in order to obtain a sufficient number of consumption experiences, and younger than 40

years to ensure vividness of their autobiographical memories, because we are likely to become semanticised with increasing age (Levine et al. 2002). All participants were British, native English speakers, and the participants were recruited through a judgemental sampling procedure from the volunteer pool of Durham University's Psychology Department as discussed above. All procedures were approved by the Durham University Research Ethics Committee and the Newcastle Magnetic Resonance Centre where the scans were conducted.

Table 4-7: Participnat profile –fMRI study

| | | |
|---|---|---|
| Gender | Male<br>Female | 8<br>10 |
| Handedness | Right<br>Left | 17<br>1 |
| Age - Range | Range<br>Mean | 21-40yrs<br>26 yrs |
| Number of years in Education | Mean | 17 years |
| Total | | 18 |

### 4.4.7 Type of experiment

Two major types of experimental designs utilized in cognitive experiments using fMRI are block designs and event-related designs (Chee et al. 2003; Dale and Buckner 1997; Buckner et al. 1996). In block designs, multiple trials of the same condition are presented consecutively, switching back and forth between blocks of experimental and control conditions, whereas event-related design trials are presented separately and in random order with respect to experimental and control conditions (Chee et al. 2003).

Advantages of block designs are; they have superior statistical power (powerful for locating voxels in which the level of activity is significantly different in the task versus the control conditions) (Lazar 2008; Friston et al. 1999); are more appropriate if the experimental goal is to detect subtle differences in BOLD signal across different test conditions (Chee et al. 2003), and are easy to implement (Donaldson, Petersen and Buckner 2001; Aguirre and D'Esposito1999). In contrast, event-related designs are effective to expand the flexibility of fMRI experiment in many ways; it is possible to let the stimulus presentation depend on the response of the subject, studies can be 'self-paced' in the sense that the subject himself controls when stimuli are presented (Maccotta, Zacks and Buckner2001); stimuli can be presented randomly (in contrast to the block design, wherein the stimulus within a block is fixed), and they allow researchers to learn about the hemodynamic or BOLD response (the time course of activity) at a single voxel. Therefore, block designs are effective for detection of activated voxels while event-related designs are better at estimating the hemodynamic response function (Lazar 2008). However, due to the greater flexibility afforded by event-related studies, the statistical analysis is often more challenging (Lazar 2008).

As detailed in pre-scan survey (Section 4.4.4), the goal of the experiment was to examine the difference between four memory conditions (uBRAM, pBRAM, BRSM and NOME) in order to test the relevant propositions and hypotheses. Thus, a block design was more appropriate for the purpose of the study because the design enabled multiple brand trials of the same condition and switching back and forth between experimental conditions (uBRAM, pBRAM and BRSM) and the control condition (NOME). This block design was not a traditional block design

because there was only one trial per block. It was a block design because the trials were too long to be considered an 'event', i.e. they lasted more than a couple of seconds. Aguirre and D' Esposito (1999) and Donaldson, Petersen and Buckner (2001) stated that block designs are easy to implement in comparison to event-related designs, which was an advantage for a novice researcher in conducting neuroscientific experiments.

### 4.4.8 FMRI stimuli paradigm

After deciding the design paradigm, decisions were made on the nature of stimuli (brands, products, advertisements etc), number of trials in each condition, time duration of the stimuli exposure (in seconds), and the number of design runs. In this regard, Kenning, Plassmann and Ahlert (2007) have explained accepted standards and procedures in fMRI studies, and this study considererd these guidelines in the paradigm stimuli. Participants involved in the study lie in an MRI scanner for a limited time duration (e.g. 45 - 90 minutes) without moving. Generally, the first 6-15 minutes of the experimental session consist of several anatomical/structural scans of the brain. Once this is completed, functional data are obtained in a series of 'runs' of between 3 and 10 minutes each. During the scan, the MRI scanner records the blood oxygen level depending ("BOLD") signal throughout the brain in every couple of seconds, and in each run when the participant performs the tasks designed by the experimenter. Generally, visual stimuli are projected onto a screen in front of the participant who can make responses by pressing different buttons of the response box.

As discussed in Sections 4.4.4.and 4.4.7, four experimental conditions (uBRAM, pBRAM, BRSM and NOME) were used. In the stimuli paradigm, each brand name appeared in the centre of the screen, in a sans-serif font (Verdana), with a point size of 20. Immediately below each brand name, the brand category appeared in brackets. The category labels 'cars', 'clothes', and 'personal care' were used for pBRAM, BRAM and NOME conditions (conditions 2 to 4), and similarly general labels (e.g. electronics) were used for the uBRAM conditions (condition 1). In task piloting, these labels were found to assist in disambiguation of context where related brand names were given in different conditions. Each of the 24 brand names (6 brands for each condition) were displayed for 15 seconds (in random order), followed by a fixation cross for 4 seconds, producing a stimulation paradigm of 7 minutes and 36 seconds. These timings were based on prior fMRI neuromarketing studies by Schaefer and Rotte (2007a; 2007b).

Participants were instructed that they would be presented with some brand names and that for each one they were to think about the associations and images in their memory that related to it. To keep participants 'on-task', they were asked to identify what kind of memory they had for each brand name (i.e. lifetime personal memory, attributes of the brand and no or little memory). Using the MRI-compatible fibre-optic response box held in their dominant hand, half of the participants had to press the fourth finger (ring finger) button for no or little memory, the third finger (the middle finger) button if their memory was of the product attributes (SM trials), and the second finger (the index finger) button for a lifetime personal memory. These response button codings were reversed for alternate participants. In between brand names, they were advised that they would see a cross, and that they were to continue to concentrate on

their brand memory until the cross appeared. Then they were to fixate on the cross until the next brand name appeared. Stimuli were presented using e-prime (v2.0.8.22; http://www.pstnet.com/eprime.cfm) on a standard PC, with a Radeonx1300pro graphics card. A Canon XEED SX6 projector projected stimuli onto a back projection screen, viewed by participants via a front silvered mirror placed at a $45^0$angle above the head coil. As in prior neuromarketing studies (Schaefer and Rotte 2007; Schaefer et al. 2006) to increase power given the relatively low number of trials in each condition, the task was repeated three times for each participant, using a new random trial order each time. Unlike a longer single paradigm, this approach gave participants a short rest between the repeats.

### 4.4.9 fMRI data collection

Blood oxygenation level dependent (BOLD) contrast images were acquired on a 3TPhillips InteraAchieva MRI system (http://www.healthcare.philips.com/in/products/mri/systems) using the integrated RF body coil for transmission, signal detection through an Eight-channel SENSE head coil, and SofTone noise reduction. To limit head movements, the area between the participants' heads and the head coil was padded with foam, and participants were asked to remain as still as possible. Snugly fitting standard Phillips headphones dampened background scanner noise. Thirty-four 3-mm slices (with a .75mm gap in between) were acquired in the transverse plane in parallel with the pons-tentorium line, with an in-plane resolution of 3 mm2 over an FoVof 192 mm2, thereby creating voxels of 3mm_3mm_ 3.75 mm. The sequence incorporated a 30-ms TE, and

an EPI factor of 53. Parallel acquisition was deployed using SENSE with an acceleration factor of 1.3, resulting in a 1950.7-ms TR. Two hundred and thirty-seven volumes (dynamics) were collected across each run, with a total scan time of just over 7 minutes 42 seconds each. The remaining 6 seconds of scanning after the stimuli finished were occupied by an instruction screen, advising participants to remain still and await further instructions. At the beginning of neuroimaging data collection, the first radio frequency pulse triggered E-prime to begin displaying stimuli, thus synchronising stimulus presentation and data collection. Anatomical data were collected in the same orientation and plane as the functional data using an MP-RAGE single-shot T1-weighted sequence, with 150 mm_1.2 mm slices through the brain (in-plane resolution .87 mm2). This sequence incorporated a TR of 9.6 ms, a TE 4.6 ms, and again employed SENSE.

### 4.4.10 FMRI analysis strategy

The neuroimaging data from the task were analysed according to the standard procedures, using SPM8 (running in Matlab R2011a;http://www.mathworks.com), with all updates up to revision 3684 (http://www.fil.ion.ucl.ac.uk/spm/). These analyses sought to determine the location of brain regions associated with the task, the intensity of activity in that region (statistical probability of occurring by chance), and its spatial extent. The key stages of fMRI data analysis are outlined in Figure 4-3 (p. 142). They consists of two key stages; pre-processing and statistical analysis (individual modelling and group analysis). These stages are discussed below in detail, following the guidelines set by the Wellcome Trust Centre for Neuroimaging, University College London (http://www.fil.ion.ucl.ac.uk/spm).

Figure 4-3: Key stages in fMRI data analysis


*(Miyapuram, 2008: 47)*

#### 4.4.10.1 Spatial pre-processing

All these steps were aimed at massaging the data before it was suitable to be statistically analysed. The first several steps put each image volume into a standardized spatial reference frame while the last pre-processing step applied a Gaussian spatial filter. The main goal of pre-processing is to reduce non-task-related (uninteresting) variability in the data. The following tasks were performed in the pre-processing stage.

a. Realignment (movement correction)

Outside SPM, this stage is known as 'motion correction'. The aim of this stage is to remove movement artefact in fMRI time-series. SPM does this by realigning a

time-series of images acquired from the same subject using a least squares approach and a 6 parameter (rigid body) spatial transformation. Initially, for each participant, data were spatially realigned to the first image in the series using an automatic sum of squares minimisation algorithm.

SPM also creates a mean image, which will be used in the next step of spatial processing co-registration. For multi-session data, realignment works in two steps. First, the first functional images from each session are realigned to each other taking the first session as reference. Second, the remaining images within each session are realigned to the first image.

b. Co registration (distortion correction)

This step was followed to overlay structural and functional images in a way that maximizes the mutual information. The key purpose of this stage is to allow display of a functional map over an individual's own anatomy.

c. Spatial normalization

In this stage, images fit into the standard template brain (Montreal Neurological Institute template). This stereotactical normalisation, which complies to the Montreal Neurological Institute template, accounted for neuro-anatomic variability and facilitated subsequent localisation with standard brain atlases.

d. Spatial smoothing

This module convolves images with an isotropic Gaussian Kernel (3-D normal curve). The idea of smoothing is to replace the intensity value within each voxel with a weighted average (as determined by a Gaussian kernel centred on that

particular voxel) that incorporates the intensity values of the neighbouring voxels. Thus, data are smoothed using a Gaussian kernel with a FWHM of 8 mm to increase the signal-to-noise ratio according to the matched filter theorem.

#### 4.4.10.2 Statistical analysis

After completing the pre-processing of images, a design matrix is constructed at the individual level (first level) to convolve the experimental design with a haemodynamic response. Then the data are specified and modelled at the group level before making relevant inferences. These stages are discussed below in detail.

a. First level model specification

In the first level modelling, individual response timings are used to design the matrix in which each mini-block lasted until the time point at which each participant typically made his or her mean response for that stimuli category. Fixation trials were modelled implicitly as a rest or baseline condition. Each of the three runs per participant was modelled separately to account for subtle session-specific fluctuations in operation of the MRI scanner. All eighteen participants' data were used separately to construct the first level model.

b. Second level model specification

In the second level analysis, F-contrasts necessary to test for these effects within-subject level (i. e. first level) were fed into a general linear model that implements a statistical T-test. Here there were four sets of contrast images, uBRAM, pBRAM, BRSM and NOME. These contrasts generate the contrast images for a between-subject analysis or on the second level analysis, so that it can be

examined whether there is a significant increase or significant decrease in a specific contrast between conditions (directional).

All eighteen participants' data were then used to construct a single fixed-effects, 'first-level' model with each participant's data partitioned separately. This fixed-effects model was estimated with proportional scaling over each run, a high pass filter of 128 s, and correction for serial autocorrelations. Following estimation of this model against the neuroimaging data, 'within-memory type' contrasts were performed to isolate the patterns of regional brain activation associated with four manipulations of brand-related memory (uBRAM, pBRAM, BRSM and NOME).

Finally, the Yale non-linear MNI to Talairach Coordinate Converter (http://www.bioimagesuite.org/Mni2Tal/index.html) was employed to transform the MNI coordinates produced by SPM back to Talairach space (http://www.talairach.org/about.html) to enable neuro-anatomical localisation according to this atlas (Talairach and Tournoux 1988).

The overall hypothesis was that brand-related memories are not mediated by a single neural system. According to the literature reviewed, the prediction was that separate systems can be disassociated, depending on whether the brand-related memory is AM or SM based. By careful examination of the type of brand-related memory, it was sought to determine whether different brand-related memories can be separated in previously identified neural networks for AM versus previously identified neural networks for SM.

In both AM associated conditions (i.e. uBRAM and pBRAM), it was expected to see activity in regions such as the middle temporal areas and the dorsal prefrontal cortex (Steinvorth, Corkin and Halgren 2006; Graham et al. 2003; Maguire, Vargha-Khademand  Mishkin 2001). The typical SM regions in the lateral prefrontal cortex connected with the medial temporal lobe and in posterior association cortices were examined for the BRSM activation (Kuchinke, Meer and Krueger 2009; Denkova 2006). It was expected that both uBRAM and pBRAM would involve brain regions associated with self-construal processing in the midline fronto parietal regions (Modinos, Ormel, and Aleman 2009). The affect-associated regions are in the areas of limbic cortex and ventromedial prefrontal area (Markowitsch et al. 2003; Markowitsch 1998; Fink et al. 1996), medial frontal gyrus, posterior cingulate gyrus and angular gyrus (Greene et al. 2001; Maddock 1999). These brain region activations were observed to examine the relationship between BRAM, self-relevance and affect. The control condition was to show the patterns of brain activity when no brand memory was presented, and no/minimum activation was expected in both AM and SM-related regions.

### 4.4.11 Limitations of fMRI

FMRI method is not without its limitations. Individual differences in physiological responding, variations in social situations, and stimuli have been shown to have a powerful effect across individuals, which may impede the generalisability of results (Cacioppo and Petty 1985). The medical environment within which the experiments were implemented may have a significant impact on the richness of data obtained for a real world marketing stimuli. Because the subject was under the scanner (a small, narrow, noisy tube) during the investigation, participants

may experience some level of discomfort that may limit the active participation. Comparative to traditional marketing research tools such as surveys and field experiments, fMRI experiments are expensive and sophisticated (e.g. approx. £500.00 per scan). In addition, the complexity in the neurophysiological processes/techniques may hinder the effective use of fMRI investigations for researchers in the field of marketing.

## 4.5 Survey

The two sections above discussed two empirical studies implemented in the study. However due to the sample restrictions and the methodology adopted, these two methods are inadequate to test all the propositions and hypotheses relevant to the study in a statistically robust manner. Thus, a survey has been conducted as the main empirical investigation, and this section discusses the design of the main survey to test the propositions and hypotheses stated in Table 4-8 below.

Table 4-8: Propositions and hypotheses measured by the main survey

| Propositions | |
|---|---|
| P4 | Specificity, vividness and affect are reflective of BRAM. |
| Hypotheses | |
| H1 | BRAM positively affects BRSM. |
| H2 | Variance in self-brand congruence is explained more by BRAM than BRSM. |
| H3a<br>H3b | BRAM positively affects brand commitment.<br>Variance in affective brand commitment is explained more by BRAM than BRSM. |
| H4 | Self-brand congruence positively influences affective brand commitment. |

Churchill's (1979) procedure for scale development and testing includes three stages: development, purification and validation. This process was followed in the study in developing the BRAM scale. The first stage of measure development was completed generating items through the literature review and qualitative interviews. The second stage of measure purification was completed through an expert judgement panel analysis and a pilot study. Confirmatory factor analysis assessed the unidimensionality, reliability and validity of BRAM dimensions and validity of other constructs (i.e. BRSM, self-brand congruence and brand commitment) proposed in the conceptual model.

### 4.5.1 Measure development: BRAM scale

As stated above, Churchill's (1979) measure development and validation procedure was followed in developing, purifying and validating the BRAM scale. Other constructs relevant to the study (BRSM, self-brand congruence and affective brand commitment) were also and validated accordingly. Measure development and validation procedure involved three studies, and they are summarised in Table 4-9 below.

Table 4-9: Overview of studies involved in the survey

| **Study** | **Objective** | **Nature** | **Sample Size** |
|---|---|---|---|
| 1. Expert Judgement panel | To develop measures for BRAM. | - Sorting tasks<br>- Allocating items to constructs | 6 |
| 2. Pilot Study | To purify measures. | - Pre-test the survey | 75 |
| 3. Main Survey | To further purify and validate measures.<br>To test the propositions and hypotheses. | - A paper Questionnaire was used<br>- Half of the sample: purify the measure.<br>- Other half of the sample: validate measures. | 303 |

In specifying the domain of the constructs, conceptual definitions were established. In the measure development process, each construct was compared with similar constructs and was defined to capture all possible aspects from the construct. Three dimensions; specificity, vividness and affect were identified through reviewing literature in psychology, sociology and marketing literature in developing the BRAM scale. Once the operational definition of each was defined, a sample of items tapping the construct was developed. The aim at this stage was to capture as many items as possible related to the construct. The items were composed in the following different ways,

- From the existing literature, items were developed based on discussing the relevant literature.
- From published scales, items were gathered for adoption or adaptation.
- From the semi-structured interviews (study 1) conducted with 22 informants, enabled to gather an item pool.

Operational definitions of these dimensions together with the original scales are provided in Table 4-10 (p. 150). The conceptual definition of BRAM is also reproduced for clarity. The origin and wording of the measures' items are provided in Appendix 4.10.

Table 4-10: Operational definitions of BRAM dimensions

| **Definition of the construct** | **Origin of items** |
|---|---|
| **Specificity**<br>Recalling contextual information related to brand-related personal memory (BRAM) reconstructed through a hierarchical retrieval process including when, where, and how this has happened. | Blagov and Singer 2004; Rubin, Schrauf and Greenberg 2003; Anderson and Conway 1993; Baumgartner, Sujan and Bettman 1992; Kopelman, Wilson and Baddeley 1989. |
| **Vividness**<br>Mental reconstruction of brand-related personal memory (BRAM) in visual, tactual, auditory, gustatory and olfactory senses. | Anderson and Shimizu 2007; Blajenkova, Kozhevnikov and Motes 2006; Levine et al. 2002; Miller, Hadjimarcou and Miciak 2000; Childers, Houston, and Heckler 1985; Richardson 1977; Marks 1973. |
| **Affect**<br>Reconstruction of feelings, mood or emotions experienced in BRAM and/or brand. | Rieffe et al. 2008; Bigne, Mattila and Andreu 2008;Moore and Wurster 2007; Sherer 2005; Hansen 2005; Richins 1997; Batra and Holbrook 1990. |
| *BRAM: Brand-related personal experiences stored as episodes in consumer mind with contextual, perceptual and affective details.* | |

### 4.5.2 Expert judgement panel

In total, 176 items were discovered to develop the BRAM scale after reviewing the literature and analysing 22 qualitative interviews. Following are the two tasks to be fulfilled by conducting expert judge analysis;

1. Select and indicate items for each dimension of BRAM based on the given operational definitions.
2. Select 9 items they felt should be included in (best describe) each dimension.

The overall objective of the above task was to satisfy the face validity of items and reduce the item pool to a manageable level in designing the survey instrument. The expert judgement process was administered with 6 marketing experts consisting academics and doctoral students in the Marketing Department at the Coventry University. They were provided with necessary instructions and information to complete the task successfully. (Please refer to Appendix 4.11 for a copy of the instructions and the list of items given to judges).

After receiving all 6 expert judgement responses, items were entered into a spreadsheet, and decisions for inclusion/exclusion for the pilot questionnaire were based on commonly used criteria (Hardesty and Bearden 2004) based on the target number of items to include in the pilot. The inter-judge percentage agreement on the items selected for inclusion varied from 60% to 100% (Hardesty and Bearden 2004). Table 4-11 (p. 152) shows the items agreed by the expert judgement panel.

### 4.5.3 Development of the survey instrument: questionnaire

As discussed in Chapter Three, the conceptual model includes four major constructs; BRAM, BRSM, self-brand congruence and affective brand commitment, in order to test the proposed propositions and hypotheses detailed in Table 4-8 above. In addition to the selected items of specificity, vividness and affect (given in Table 4-11) selected through the expert judgement panel, Table 4-12 (p. 153) details definitions and scales of the other three constructs (BRSM, self-brand congruence and affective commitment) used in the questionnaire, adopted from existing scales. Please refer to Appendix 4.12 for the origin and wording of these items.

Table 4-11: Expert judgement panel agreement percentage

| | **SPECIFICITY (From 34 items)** | **%** | **VIVIDNESS (From 25 items)** | **%** | **AFFECT (From 115 items)** | **%** |
|---|---|---|---|---|---|---|
| 1 | When I recall this memory, I can remember everything about this event happened. | 100% | When I recall the memory, I can picture of the event | 80% | While recalling the event, I felt the memory was very enjoyable | 100% |
| 2 | I can remember the day when this event happened. | 60% | When I recall the memory, I can picture the brand | 80% | While recalling the event, I felt the memory was very pleasant | 80% |
| 3 | I can remember the events that occurred before this event. | 60% | When I recall the memory, I can picture the brand logo | 60% | While recalling the event, I felt the memory was very good | 60% |
| 4 | I can remember the events that occurred after this event. | 60% | I can remember the sounds associated with the event | 60% | While recalling the event, I felt the memory was very positive | 100% |
| 5 | I can remember my age when this event happened | 60% | I can remember the taste associated with the event | 60% | I have strong feelings about this memory. | 60% |
| 6 | When I recall this memory, I can remember where this event happened. | 60% | I can remember the smells associated with the event | 60% | This memory makes me feel positive towards the brand. | 80% |
| 7 | When I recall this memory, I can remember people involved in this event. | 80% | The images that came to mind when recalling the BRAM is vivid | 60% | I have warm feelings about this brand | 60% |
| 8 | I can remember the setting (surrounding) involved in the event. | 80% | The images that came to mind when recalling the BRAM is vague | 60% | I have a good feeling about this brand | 60% |
| 9 | I can remember the packaging of the brand associated with this event. | 60% | The images that came to mind when recalling the BRAM is clear | 80% | While recalling the event, I felt the memory was very nice | 60% |
| 10 | I can remember the advert of the brand associated with this event. | 80% | The images that came to mind when recalling the BRAM is unclear | 60% | I feel alive when I recall this event | 60% |
| 11 | I can remember the detailed story of what happened in the event. | 80% | The images that came to mind when recalling the BRAM is distinct | 80% | I like this brand as I feel happy when I recall this event | 60% |
| 12 | This was an important event to me | 60% | The images that came to mind when recalling the BRAM is weak | 60% | Because of this event, this brand is sentimental to me. | 60% |
| 13 | This was a significant event to me | 60% | The images that came to mind when recalling the BRAM is well defined | 60% | This memory is worth remembering | 60% |

Table 4-12: Definitions and scales (adapted) for BRSM, self-brand congruence and affective brand commitment

| Mediating Variables | | |
|---|---|---|
| BRSM | Definition | The abstract brand knowledge stored in consumer memory as a result of consumer brand-related experiences. |
| | Scales Used | Smith and Park 1992<br>Kent and Allen 1994 |
| Self-Brand Congruence | Definition | The global view of how a person view her/him self in relation to the brand. |
| | Scales Used | Sirgy et al. 1997 |
| Dependent Variable | | |
| Affective Brand Commitment | Definition | The affection developed by the consumer towards the brand. |
| | Scales Used | Evanschitzky et al. 2006; Coulter, Price and Feick 2003; Broderick 2007; Park and Kim 2003; Beatty and Kahle 1988 |

The pilot questionnaire used in the study consisted of 7 pages and is given in the Appendix 4.13. There were five sections in the questionnaire.

- **Section One** included instructions on how to complete the questionnaire with an example of a brand-related personal memory. Then this section included items of three BRAM attributes: specificity, vividness and affect on a five-point scale indicating the degree of agreement with each statement.
- **Section Two** included statements on a five-point scale about brand knowledge to measure the BRSM. In addition to the brand knowledge scale items, items related to the brand attributes, benefits and personality characteristics were also included.

- **Section Three** asked respondent's attitude, purchase intention and brand commitment towards the brand associated with respondent's AM on a five point scale.
- **Section Four** investigated the respondent's self-relevance towards the brand. Here a scale by published by Sirgy et al. (1997) was used to measure the concept of self-brand congruence as the mediating variable.

### 4.5.4 Pilot study

As discussed in the above Section 4.5.3, the pilot questionnaire was developed after analysing expert judgement panel ratings and using the existing scales. This questionnaire was used in the pilot study. A sample of 75 respondents from the sample characteristics (discussed in Section 4.5.5) were involved in the study. They were also asked to provide qualitative feedback on any aspect of the instrument. This feedback was useful to eliminate items with the same meaning, re-word ambiguous words in a simple manner and analyse the reliability through inter-item correlations and item-total correlations (discussed in Section 4.5.6.1).

Finally, based on the above revisions, the remaining items were reviewed individually, and a final set of items was identified for the main survey. On average 11-13 items were left to reflect each dimension in BRAM. Please refer to Appendix 4.14 for the final questionnaire used in the survey.

### 4.5.5 Sampling strategy

The target population of the study was defined as all British consumers who have consumed branded products in their life and should be between the age above 18 and below 60. The minimum age group was decided to be 18 so that

respondents had gone through at least two life transition stages. The maximum age was set at 60 as people tend to forget their memories when they become old. British consumers are defined as either British citizens or consumers with other nationalities who have been living in the country (UK) for more than 10 years. This is because cultures are likely to differ in terms of values and even in the degree to which they value remembering personal experiences (Mullen and Yi 1995). Other researchers have also speculated that there may be cross-cultural differences in the amount or content of past and personal experiences (Nelson 1990, 1993; Pillemer and White 1989). Therefore, all British staff and home students in Coventry University were included in the sampling frame.

#### 4.5.5.1 Sample profile

Due to the difficulty of sorting a random sample, a judgemental sampling method was used in the survey, which is usually an extension of convenience sampling. The judgement was relevant to the gender, ethnicity and age group representation. Table 4-13 (p. 156) shows the representation of UK population in terms of gender, ethnicity and age groups and the sample profile used in the study is given in Table 4-14 (p. 157), which demonstrates a good representation of the study population. By investigating the demographic profile of the UK population and its representation in the sample profile, a fair justification can be seen. The gender selection in the sample was very fair, with 53% female and 47% male (representing 50% each in the population). For ethnicity, the majority of respondents of were matched with the population (72% to represent 93%), and all respondents were within the age group of 18-65 which is 66% of the population.

*(Wikipedia, 2010)*

Table 4-14: Sample profile of the survey

| **Gender** | | **%** | **Ethnicity** | | **%** | **Age group** | | **%** |
|---|---|---|---|---|---|---|---|---|
| Female | 160 | 53 | British –White | 231 | 72 | 18 -30 yrs | 170 | 56 |
| Male | 143 | 47 | British – Black | 34 | 11 | 31 – 45 yrs | 103 | 34 |
| | | | British – Asian | 57 | 18 | 46 – 65 yrs | 30 | 10 |
| | 303 | 100 | | 303 | 100 | | 303 | 100 |

The sample was sought through personal contacts of the researcher and snowballing via personal contacts. Potential respondents were invited to participate in the survey by meeting face-to-face, telephoning and sending emails using personal email accounts. The snowballing technique was used with these personal contacts to get additional participants for the survey. As some respondents were contacted by personal e-mail, and they contacted their peers and friends through their own contact list, respondents did not consider the e-mail as spam, but as receiving from a known source. Therefore, both email questionnaires and paper- based questionnaires were used to obtain data. These questionnaires were collected and completed within a 12-week period from July –September 2010. Although questionnaires were sent and received by e-mail and in person, no response differences were noticed between these two modes and therefore did not affect the results.

312 questionnaires were collected from the target sample (i.e. both British staff and students). Nine questionnaires were not complete and were unable to be used and only 303 questionnaires were used for the analysis. A sample size of 200-500 is generally recommended to be sufficient for data analysis (Hair et al.

1998) and therefore this sample size was considered satisfactory for the analysis. Malhothra (1993) advocated a ratio of five to ten cases per variable in the model, and the original model is well with this limit sample adequacy level.

### 4.5.6 Analysis strategy: BRAM measure purification

Data analysis strategies were employed to test the propositions and hypotheses established through the survey. Four main steps have been followed in the analysis strategy as follows;

1. New measure purification and validation
2. Existing measure purification and validation
3. Testing higher order structure for BRAM attributes
4. Testing the conceptual model.

As detailed in Section 4.5.5.1, 303 usable questionnaires were collected. The total sample of 303 was split into two half samples. The first half of the sample (n=150) was used to purify BRAM dimensions and explore the unidimensionality. The second half of the sample (n=153) was used to validate BRAM dimensions and adopt existing scales. The total sample of 303 was used to test the propositions related to BRAM, and hypotheses considering BRAM, BRSM, self-brand congruence and affective brand commitment.

This section discusses two measure purification strategies: internal consistency and unidimensionality. The procedure recommended by Churchill (1979) was used to purify the developed measures. Initially, all items expected to tap the different dimensions of BRAM were factor analysed, taking the items of each dimension separately.

#### 4.5.6.1 Internal consistency

To investigate the internal consistency, inter-item correlation for each item was checked taking each dimension at a time. The domain sampling model rests on the assumption that items which belong to the same domain share the same amount of 'common core' (Churchill 1979:68), therefore items which correlate poorly with other items cannot share the same amount of common core and cannot be tapping the same dimension (Demangeot 2007). In the same vein, items with a low item-total correlation were deleted. As Anderson and Gerbing (1988) posited, it was important to use both methods because the item-total correlation method does not account for external consistency, and many constructs were expected to correlate highly as items belonging to several factors may have still displayed high item-total correlations.

Also item means and variances were studied. According to DeVellis (1991), a scale item with a high variance and a mean close to the scale's mid-point is healthy. Therefore, both individual items as well as items in relation to the other items of the dimension were considered in the investigation. Items with significantly higher or lower mean (than the rest of the items) and lower standard deviation were deleted.

#### 4.5.6.2 Unidimensionality exploration

Unidimensionality is the existence of a single trait or construct underlying a set of measures (Hattie 1985; McDonald 1981). Anderson and Gerbing (1988) outlined the confirmatory factor analysis (CFA) as an updated paradigm for measuring unidimensionality in addition to traditional methods such as coefficient alpha, item-total correlations, and exploratory factor analysis (EFA).

The items meant to reflect the same construct when factor analysed, factor by factor, to ensure they all loaded on the expected factor. When a second factor was extracted, the items loading on the second factor were studied to decide whether the factor was conceptually meaningful and was to be retained /added to the conceptualisation. When this was not the case, then the item loading the highest on the second, unwanted factor was removed and the analysis was re-run, and the process repeated until it returned a single factor. Once this procedure was applied to all dimensions expected to load on the same construct (Specificity, Affect and Vividness), the retained items of all dimensions of each construct were submitted together to another EFA, to ensure that all items loaded on the expected dimension. Items which loaded on all dimensions, or which did not load on any dimension were removed, since these two situations were symptoms of items which do not tap one and only one dimension adequately and therefore prevent the measure from being both unidimensional and internally consistent. Items that are loaded on a dimension other than the expected dimension were reviewed alongside the definition of the dimension they loaded on. They were either retained in the 'new' dimension or removed based on an assessment of their face validity.

### 4.5.7 Analysis strategy: BRAM data validation

New measures (i.e. Specificity, Vividness and Affect) were validated on the second half of the sample (n=153) which was not used during the purification stage.

#### 4.5.7.1 Normality assessment

Measure validation was carried-out using Confirmatory Factor Analysis (CFA), with LISREL version 8.80 (Joreskog and Sorbom 1993). Like any Structural Equation Modelling (SEM) technique, CFA assumes normal distributions, and thus kurtosis and skewness of each item were analysed (Please refer to Appendix 4.15 for normality statistics).

This data show some deviation from normality; however, such minimal deviations are common in social sciences (Demangeot 2007; Finch and Curran 1995). Generally, in large samples where the sample is above 200, skewness does not make a substantive difference in analysis (Curran, West and Finch 1996; Chou and Bentler 1995; Hoyle 1995).

#### 4.5.7.2 Unidimensionality verification

As already mentioned in Section 4.5.6.2, in addition to investigating EFA, CFA was carried out as a more rigorous measure of unidimensionality (Anderson and Gerbing 1988). In the CFA analysis, each observed variable was specified to reflect only one latent variable. The overall fit of the model was enough to determine whether a measure is unidimensional or not (Anderson and Gerbing 1988; Kumar and Dillon 1987).

Initial models were specified for all newly developed measures and the overall goodness of fit of each model was assessed. Then the standardised residuals were examined, where the value of standardised residual greater than +2.58 or lower than -2.58 indicates misspecification (Steenkamp and van Trijp 1991). Items that have large residuals with other items on the same scale, or with

items on other scales may have been specified to load on the 'wrong' factor or be part of an undetected factor. Other items may have large residuals but without a specific pattern (Steenkamp and van Trijp 1991). Thus, items which showed the highest residuals were either re-specified or removed one by one, considering the face validity, and the analysis was re-run until all the goodness-of-fit indices and an analysis of standardised residuals confirmed that the unidimensionality of each scale had been achieved.

#### 4.5.7.3 Reliability assessment

Once the unidimensionality of each measure had been verified, reliability measures were carried out. The reliability of a measure is an indication of the stability and internal consistency that helps to assess the goodness of fit of the developed measures (Sekaran 2003). Two common methods utilised to assess reliability were individual item reliabilities (as indicated by the items' multiple squared correlations known as $r^2$ in LISREL) and the composite (construct) reliability. The composite reliability was calculated by using Equation 4-1 given below. As Bagozzi and Yi (1988) and Malhothra (2008) recommended, an accepted composite reliability threshold was considered to be 0.6.

Equation 4-1: Composite reliability formula

$$CR = \frac{(\Sigma \text{ standard loadings})^2}{(\Sigma \text{ standard loadings})^2 + (\Sigma \text{ indicator measurement error})}$$

#### 4.5.7.4 Content validity assessment

Content validity ensures that the measure includes an adequate and representative set of items that tap the concept. The content validity is greater when more scale items represent the domain. The panel of judges agreed on the content validity of the newly developed measure, BRAM. Face validity is considered as an index of content validity, and indicates that the items that are intended to measure the construct or dimension represent the whole of a phenomenon. As recommended by Churchill (1979), the remaining sets of items for each dimension were considered again against the definition of the dimension. It was a trade off between higher model fits and reliabilities on the one hand, and face-validity on the other. Therefore, the effort was to maintain a reasonable balance between keeping items that representatively tap the construct and removing items to improve the model fit or composite reliability.

#### 4.5.7.5 Convergent validity assessment

Construct validity testifies how well the results obtained from the use of the measure fit the theories around which the test is designed (Sekaran 2003). Construct validity is usually assessed by considering convergent and discriminant validity, criterion and nomological validity. The convergent validity is discussed in this section.

Convergent validity is established when the scores are obtained with two different instruments measuring the same concept are highly correlated (Sekaran 2003). Convergent validity is assessed by investigating the extent to which each item contributes to the meaning of the dimension being measured. The contribution is measured by the regression coefficient of each item loading

on the relevant latent variable (dimension). Items below 0.3 regression coefficient were treated as weak items and removed from further analysis (Steenkamp and Trip 1991). In addition to this measure, Average Variance Extracted (AVE) (as per Equation 4-2) was also used to assess the convergent validity. Fornell and Larcker (1981) recommend a threshold of 0.5 to suggest convergent validity.

Equation 4-2: Average variance extracted formula

$$AVE = \frac{(\Sigma \text{ squared standardised loadings})}{(\Sigma \text{ squared standardised loadings}) + (\Sigma \text{ indicator measurement error})}$$

Although the formal criterion validity assessment requires the administration of too many additional scales to compare the measures being developed, the study of correlations between factors verifies that the highest correlations are between the factors expected to load on the same construct, which also determines the convergent validity (Demangeot 2007).

#### 4.5.7.6 Discriminant validity Assessment

Discriminant validity is established when, based on theory, two variables are predicted to be uncorrelated (Sekaran 2003) and therefore assesses whether the newly developed scale measures are different from other scales. Two approaches were used in the study to assess the discriminant validity. As the first approach,

each dimension was assessed against every other dimension, using a set of nested models. For each pair of dimensions, two LISREL models were tested in succession, where the correlation between the dimensions was first allowed to vary, and then set to 1. Since the two models were nested models (the second being a special case of the first), a Chi-Square difference test could statistically assess whether the correlation between the two constructs is different from 1, i.e. whether there is discriminant validity between the two dimensions. Second, a confidence interval of +/- 2 standard deviations around each correlation was calculated. Any confidence interval containing 1 indicates a lack of discriminant validity.

#### 4.5.7.7 Nomological validity assessment

Nomological validity is the degree to which a construct behaves as it should within a system of related constructs, and this validity was assessed when the full structural path model was estimated. In the study, nomological validity of the newly developed measure (BRAM) was tested together with the theoretically related constricts such as self-brand congruence and brand commitment.

#### 4.5.7.8 Assessment of existing measures

Existing scales for BRSM, self-brand congruence and affective commitment were used to test the hypotheses. Their item reliability indications are given in Appendix 4.12. However, reliability of the construct, convergent and discriminant validity were assessed using the sample (Peter and Churchill 1986) to ensure that each measure is reliable and valid to be used for hypothesis testing. The validation process of these measures is outlined in Table 4-15 (p. 166).

Table 4-15: Validation process of existing measures

| | **Measures /Steps** | **Analysis Strategy** |
|---|---|---|
| 1. | Normality assessment | Kurtosis and skewness |
| 2. | Verifying the unidimensionality | Confirmatory Factor Analysis |
| 3. | Assessing reliability | Composite reliability |
| 4. | Assessing convergent validity | Confirmatory Factor Analysis |
| 5. | Assessing discriminant validity | Confirmatory Factor Analysis |

### 4.5.8 Development of alternative models

It is recommended to test several alternative models to select the best model with a good fit that explains the relevant phenomenon. Several models were developed based on different theoretical arguments for BRAM dimensions and they are explained in detail in the Reliability and Validity Chapter (Chapter 5, Section 5.3.2.1).

#### 4.5.8.1 Model identification

The identification of each model was verified by ensuring that each part of the model by linking observed variables to latent variables and first order factors to second order constructs (Rindskopf and Rose 1988).

#### 4.5.8.2 Model specification and comparisons

Alternative models were developed based on the theoretical review and each model was evaluated using goodness of fit indices. Then a series of indices were considered to assess the model fit of hypothesised models. Following Table 4-16 (p. 167) indicates different indices used to assess the model fit.

Table 4-16: Fit indices and their acceptable thresholds

| Model fit criterion | Acceptable Threshold Levels | Description |
|---|---|---|
| *Absolute Fit Indices* | | |
| Chi-square (Browne and Cudeck 1993) | Low $\chi 2$ relative to degrees of freedom with an insignificant *p* value ($p > 0.05$) (Hooper, Coughlan and Mullen 2008) | $X2/df \leq 3$ (Garver and Mentzer 1999) |
| Root Mean Square Error of Approximation (RMSEA) (Joreskog and Sorbom 1993; Steiger 1990.) | Value less than 0.05 indicates a good model fit. (Hu and Bentler 1999 recommend a cut off value of 0.06; Steiger 2007 recommended values less than 0.07) | Has a known distribution. Favours parsimony. Values less than 0.03 represents excellent fit. |
| Goodness of fit (GFI) (Ping 2004) | Values greater than 0.95 (Schumacker and Lomax 2004; Hooper, Coughlan and Mullen 2008) | Scaled between 0 and 1, with higher values indicating better model fit. |
| Adjusted GFI (AGFI) (Ping 2004) | Values greater than 0.95 (Hooper, Coughlan and Mullen 2008; Schumacker and Lomax 2004) | Adjusts the GFI based on the number of parameters in the model. Values can fall outside the 0-1.0 range. |
| Root Mean Square Residual (RMR) | Good models have small RMR (Tabachnik and Fidell 2007) | Residual based. The average squared differences between the residuals of the sample co variances, and the residuals of the estimated covariances Unstandardised. |
| Standardised version of the RMR (SRMR) | SRMR less than 0.08 (Hu and Bentler 1999) | Easier to interpret due to its standardised nature. |
| *Incremental Fit Indices* | | |
| Normed Fit Index (NFI) | Value close to 0.95 reflects a good model fit (Hooper, Coughlan and Mullen 2008; Schumacker and Lomax 2004) | Assesses fit relative to a baseline model, which assumes no covariances between the observed variables. Has a tendency to |

| | | |
|---|---|---|
| | | overestimate fit in small samples. |
| Non-Normed Fit Index (NNFI)<br>Tucker-Lewis Index | Value close to 0.95 reflects a good model fit.<br>(Hooper, Coughlan and Mullen 2008;Schumacker and Lomax 2004) | Non-normed values can fall outside the 0-1 range. Favours parsimony.<br>Performs well in simulation studies (Sharma et al. 2005; McDonald and Marsh 1990) |
| Comparative Fit Index (CFI)<br>(Bentler 1990) | Values greater than 0.95<br>(Hooper, Coughlan and Mullen 2008) | Normed, 0-1 range. |
| *Parsimonious Fit Indices* | | |
| Parsimonious Fit Index (PFI) | 0 (no fit) – 1 (perfect fit)<br>(Schumacker and Lomax 2004) | Compares value in alternative models |

There are three categories of fit indices: absolute, relative and parsimonious fit indices. Absolute fit indices indicate how well the model reproduces the observed variables' covariance matrix (Hair et al. 1998) while relative fit indices indicate how well the model being tested fares in comparison to other models, especially the full independence model (where no relationships is hypothesised between any of the variables), and the saturated model (where every item is hypothesised to correlate with every other item). Parsimonious fit indices investigate the overall complexity of the model (Kelloway 1998). Based on the above goodness of fit indices, alternative models were developed and assessed to select the best fitting model.

Chi-square was reported for each model of the LISREL analysis purely as an indication of goodness of fit. Chi-square differences were used statistically to compare nested models, as the Chi-square statistic is sensitive to deviations from multivariate normality and sample size (Siguaw 2000).

As the first phase of analysis, the relationship between observed variables and their first-order latent variable were carriedout. The objective was to examine the relationships between observed variables, and first order latent variables in order to determine the best fit by investigating whether the goodness-of-fit indices were within the indicative range.

#### 4.5.8.3 Models with higher-order constructs

First order constructs observe variables (i.e. measure items) as indicators of the construct. The relationship between indicators and a first order construct typically assumes the construct drives the indicators, i.e. a reflective relationship (Ping 2004). Second order constructs report constructs with other constructs as their indicators. These second order constructs can be used to combine several related constructs into a higher order construct using structural equation analysis. The following sections briefly discuss the analysis strategy of second order construct (BRAM).

#### 4.5.8.4 Analysis of individual factor relationships

Factor relationships were assessed between first-order and second-order constructs to examine the hypothesised relationships through statistical significance and parameter estimates.

#### 4.5.8.5 Reliability assessment

Reliability was assessed by calculating the second-order constructs' composite reliability using the formula given in Equation 4-3 (p.170).

Equation 4-3: Higher-order construct - Composite reliability formula

$$CR = \frac{(\Sigma \text{ standardised loadings of 1st-order on 2 nd-construct})^2}{(\Sigma \text{ standardised loadings of 1st-order on 2 nd-order construct})^2 + (\Sigma \text{ 1 st order construct error variance})}$$

4.5.8.6 Convergent validity assessment

Convergent validity of second-order factors was assessed through the standardised factor loadings by assessing statistical significance. Additionally, the average variance was calculated using the formula given in Equation 4-4 by ensuring a value of 0.50 and over (Fornell and Larcker 1981) to ensure the convergent validity.

Equation 4-4: Higher-order construct – Average variance extracted formula

$$AVE = \frac{\Sigma \text{ (standardised loadings of 1 st-order on 2 nd order construct)}^2}{\Sigma \text{ (standardised loadings of 1 st-order on 2 nd-order construct)}^2 + (\Sigma \text{ 1 st-order error variance})}$$

#### 4.5.8.7 Discriminant validity assessment

Discriminant validity between the two second-order factors was verified in two manners. First, the final model was tested against a nested model where the correlation between the two second-order factors was set to 1, to ensure the difference between the two model's Chi-squares was significant. Second, a confidence interval of +/- 2 standard deviations was built around the correlation coefficient, to ensure it did not contain 1.

### 4.5.9 Assessment of the Structural Equation Model (SEM)

At this stage, the relationships between latent variables were investigated by assessing the complete structural equation model. This is the final stage of the analysis process and, in addition to the convergent and discriminant validity, the nomological validity was assessed (Anderson and Gerbing 1988) by assessing the SEM.

### 4.5.10 Assumptions and considerations for the use of data analysis

This section discusses various assumptions and considerations employed in the exploratory analysis and structural equation modelling methods.

#### 4.5.10.1 Exploratory Factor Analysis (EFA)

Figure 4-4 (p.172) outlines an overview of the steps in exploratory factors analysis (Rietveld and Van Hout 1993: 291).

Figure 4-4: Overview of the exploratory factors analysis



*(Rietveld and Van Hout 1993: 291)*

In the purification stage, the starting point of factor analysis is the investigation of inter-correlations between variables and reducing the dimensionality of the matrix (Field 2000:424). Variables with high inter-correlations measure one underlying variable known as a factor. Factor loadings determine the substantive importance of a particular variable to a factor (Field 2000:425) by squaring this factor loading. EFA was conducted to ensure that all hypothesised dimensions of a construct emerged as separate factors, each measured by items loading solely on that factor. The following sections detail the rules and steps followed to obtain EFA results and interpretation of EFA results. The EFA analysis was conducted by using the SPSS 8.0 package.

#### 4.5.10.2 Factor extraction

As the first stage of the measure purification, correlations between individual items were investigated to maintain the number right number of factors. To test the sample adequacy, Kaiser-Meyer-Olkin (KMO) value of 0.7 or above sought at the 0.05 significant level (Hair et al. 1998). In the next stage, three main rules were considered to decide on the number of extract factors;

1. Number of Eigenvalues greater than 1.
2. Number of factors before a 'scree' or sudden drop, shown on a scree plot as an 'elbow', occurs in the difference between Eigenvalues.
3. Horn's parallel analysis, where only the Eigenvalues obtained from the analysis which are higher than Eigenvalues produced by a set of random data are retained.

Although an agreement on the above three rules is debatable, the parallel method is accurate more often than the scree method. Generally, the first rule,

'Eigenvalues' overestimates the number of components (Zwick and Velicer 1986). While Horn's parallel analysis results were given priority, all three criteria were reviewed, and where they produced no clear consensus, analyses with a different number of factors to extract were run, and the most interpretable solution was retained.

#### 4.5.10.3 Factor rotation

Varimax rotation (orthogonal) developed by Kaiser (1958) was selected as the factor rotation method. As Abdi (2003) stated, varimax rotation is indubitably the most popular rotation method by far. For varimax, a simple solution means that each factor has a small number of large loadings and a large number of zero (or small) loadings. This simplifies the interpretation because, after a varimax rotation, each original variable tends to be associated with one (or a small number) of factors, and each factor represents only a small number of variables. In addition, the factors can often be interpreted from the opposition of few variables with positive loadings to few variables with negative loadings (Brown 2009; Abdi 2003). To ease interpretation, only loadings greater than 0.45 were requested and displayed in rotation results.

#### 4.5.10.4 Structural Equation Modelling

This section discusses the assumptions and choices made in relation to the Structural Equation Modelling (SEM) method employed to validate measures and test the propositions/hypotheses in the study.

SEM uses various types of models (regression, path, confirmatory and structural) to depict relationships among observed variables with the goal of

providing a quantitative test of such hypothesised theoretical models (Schumacker and Lomax 2004). Importantly two types of variables, latent (constructs or factors that are not directly observable or measured), and observed (indicator) variables are involved where latent variables are inferred from a set of observed variables.

All SEM techniques share two main traits: 1.They estimate several interrelated dependence relationships and 2. The relationships can include unobserved phenomena, for which measurement error is taken into account during the estimation (Hair et al. 1998).

SEM has an advantage over regression analysis in some ways; SEM considers the measurement error where as regression does not consider this and therefore may be biased; multiple regression allows estimating only one dependent variable at a time whereas in SEM, several independent and several dependent variables can be estimated simultaneously (Hoyle 1995). SEM was therefore more applicable than regression analysis for estimating and testing the nomological network of relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

#### 4.5.10.5 SEM assumptions

A number of assumptions were made in the use of SEM as follows;

1. Independent observations

Data collection was designed in such a way that questionnaires were answered by each individual separately and it was assumed that observations were independent from each other.

2. Linearity of all relationships

Generally, marketing research assumes linear relationships between variables. The same assumption was made in implementing this study as well.

3. Normality of the data

Normality assumptions were considered by testing in particular for the skewness and kurtosis of each of the variables in the structural equation (Baumgartner and Steenkamp 1996; Byrne, Shavelson and Muthen 1989). The results of these tests are reported in Appendix 4.15.

4. Continuous data

Likert scale was used to measure observable variables and therefore cannot be continuous. However, they are assumed to provide categorised reflections of an underlying continuous variable (Jöreskog and Sörbom 1996). Ordinal variables with at least five categories, which do not depart widely from normality, have been found to be suitable for Structural Equation Modelling (West, Finch and Curran 1995).

#### 4.5.10.6 Estimation method

The Maximum Likelihood method is suited for sample size within the range of 200-400 regions (Bollen 1989) and therefore this method was used in each stage of the analysis.

#### 4.5.10.7 Two-step method

Anderson and Gerbing (1988) proposed a two-step model approach. The emphasis here is to analyse two conceptually distinct models; a measurement

model followed by the structural model. Many authors have used the two-step method (e.g. Diamantopoulos and Siguaw 2000; Joreskog and Sorbom 1993) because the measurement model needs to be tested first to ensure that the chosen indicators measure the construct before the hypothesised relationships are tested through the structural model. In addition, the manner in which models in LISREL are assessed is from an observed variable to a latent variable (i.e. the measurement model) rather than the relationships between latent variables (i.e. structural model). Therefore, the measurement model plays an important role in determining hypothesised relationships.

This two two-step method was followed in the study. Initially the BRAM scale was developed and validated after identifying and eliminating items that led to model misspecification before arriving at the measurement model with good fit indices. As the second stage, the structural model was developed to test the hypothesised relationships.

4.5.10.8 The role of re-specification (Confirmatory Factor Analysis and SEM)

As in other software packages, LISREL provides directions and cues to avoid misspecification. These specification errors can be detected through the study of residuals (that represent the differences in coefficients between the observed and the estimated correlation or covariance matrix). According to Hair et al. (1998) and Steenkamp and van Trijp (1991), residual values less than -2.58 and greater than 2.58, statistically significant at the 0.05 level, indicate an estimation error between a pair of indicators. These are used to indentify problematic indicators. In addition, the residual patterns can indicate loading on

a wrong factor or that items are part of a second, undetected factor (Steenkamp and van Trijp 1991).

During the testing of a measurement model, modification indices can point to items that load on several factors, a scenario that violates the unidimensionality principles of classic measurement theory, or to other sets of items whose error terms correlate against the principles of classic measurement theory. Such items were deleted from further analysis. During the testing of the nomological network, modification indices were used to identify additional relationships between latent variables. Addition of these relationships to obtain a better fitting model was only carried out when those relationships could be argued theoretically. Further, adding relationships purely on the basis of one sample's data exposes one to the danger of 'over fitting the data', and to the threat of lack of replicability in another sample (Diamantopoulos 1994; MacCallum, Roznowski and Necowitz 1992). Additionally, theory aims to be prudent, and diminishing returns are associated with the addition of further relationships to a model.

During the measure validation study, the above re-specification tools were used to obtain good fit indices. Higher levels of concurrent reliability, validity and parsimony were achieved by removing some items that displayed several high residuals whose modification indices suggested that they loaded on more than one variable, or whose error term correlated with the error term of another item, which violated the measurement theory's unidimensionality assumption (Anderson and Gerbing 1988).

### 4.5.11 Considerations and limitations in data collection and analysis

Different aspects of bias and error affect on the validity and reliability of the research study that may influence the conclusions negatively. In this section, the main types of errors are discussed and considered as limitations related to the study.

#### 4.5.11.1 Considerations in data collection

It may be possible that various errors can happen in the research process. Following Table 4-17 gives an overview of the possible errors and the steps taken to avoid/reduce such limitations.

Table 4-17: Possible errors and steps taken to avoid errors

| Possible errors in the research process | Steps taken to avoid errors |
|---|---|
| *Data Collection* | |
| Gather wrong data<br>• Not proper definitions of the problem/relationships by the researcher | • An extensive literature search in psychology, marketing and consumer behaviour.<br>• Review/revise the conceptual model many times based on the feedback received from peers and experts (both subject and methodological).<br>• Initial exploration of the conceptualisation through qualitative interviews.<br>• A detailed description and implementation of data collection strategies. |
| *Data Analysis* | |
| Inappropriateness in data analysis<br>• All steps have not been followed in the study.<br>• Interpretation issues.<br>• Not used appropriate data analysis techniques. | • Explained the analysis process in detail so that it is assured that every possible step has been completed in the analysis.<br>• Provided details and complete analysis of the results in the report. |

| | |
|---|---|
| *Sampling Errors* | |
| Irrelevant choice of sample frame and the response rate | • Sample frame is representative of the target population that represented consumers in UK.<br>• Sample was representative in terms of demographic data (age, gender and ethnicity). |
| *Measurement Process* | |
| Conditioning issues and Reporting errors | All suspicious questionnaires given below were eliminated from further analysis;<br>• Questionnaires where the same answers were given (e.g. agree '4') for all items in several pages.<br>• Questionnaires where no answers were given for the last two pages. |
| *Instrument Bias* | |
| Ambiguous and difficult questions | • The items were developed using guidelines provided in the literature.<br>• The wordings of certain items were adjusted to maintain a smooth flow.<br>• Some items were negatively worded to avoid bias.<br>• Items written for the scales developed were submitted to 6 expert judges to purify items.<br>• The scale development and validation process helped to screened out further confusing items, by eliminating items with low item-to-total correlation. |
| *Respondent Error* | |
| • Tendency of systematic responses to questionnaire items<br>• Response errors by articulating the question incorrectly, mistaking ideas | • Included both positively and negatively worded items. |

#### 4.5.11.2 Considerations in data analysis

Any recognised academic research study requires a high level of rigour and relevance. This section discusses the steps taken to ensure the rigour in the

analysis process. Reliability is the consistency of output over the time and across cases and across items in the instrument. With quantitative analysis, every effort was taken to ensure the reliability through relevant statistical measurements as reported in Chapter 5.

On the other hand, validity estimates the authenticity of the cause and effect relationships (internal validity) and their generalizability to the external environment (external validity). Several types of tests were used to measure the validity in the analytical process (content validity or face validity, construct validity in terms of convergent and discriminant validity, and nomological validity). All these tests were carried out in the study and reported in Chapter 5. The complete process of reliability and validity assessment was carried out in the analysis through Exploratory Factor Analysis with SPSS 17.0 and Structural Equation Modelling with LISREL 8.80(Joreskog and Sorbom 1993).

#### 4.5.11.3 Survey data collection and analysis summary

The Table 4-18 (p. 182) outlines a summary of the data collection and analysis strategy used in the main study, i.e. the survey.

Table 4-18: Overview: Data collection and analysis strategy for the main survey

| **Objective** | **Method** | **Analysis Strategy** |
|---|---|---|
| Measure Development | • Expert Judgement (n=6)<br>• Pilot test (n=75) | • Best items selection based on Judge's agreement percentage.<br>• Inter-item correlation analysis |
| Measure Purification | Main Survey ( n=150) | • Inter-item correlation analysis<br>• Total-item correlation analysis<br>• Exploratory Factor analysis |
| Measure Validation | Main Survey (n=153) | • Confirmatory Factor Analysis<br>• Reliability and validity assessment |
| Testing of Propositions 1- 4 | Main Survey (n=303) | • Second order Confirmatory Factor Analysis |
| Testing of Hypotheses 1-4 | Main Survey (n=303) | • Structural Equation Modelling |

## 4.6 Summary

This chapter discussed the research approach relevant to the study and the data collection strategy. Three empirical data collection strategies were employed: qualitative interviews, fMRI experiment and a survey including expert judgement panel and pilot survey. For each method, the relevant objectives, the rationale for using the data collection strategy, the sample, methodology, analysis strategy and limitations were discussed. Table 4-19 (p. 183) outlines a summary of this Methodology Chapter.

Table 4-19: Methodology chapter summary

| | Study | Objectives | Sample size | Analysis strategy | Software Used | Propositions Hypothesis |
|---|---|---|---|---|---|---|
| 1 | Qualitative Interviews (Section 4.3) | • To discover whether and how BRAM exist in consumer psychological structures<br>• What are the behaviours of BRAM and BRSM? | 22 | Meaning categorisation and condensation | Nvivo 8.0 | P1, P4<br>H3a, H3b |
| 2 | fMRI Experiment (Section 4.4) | • To examine neural correlates of BRAM and BRSM<br>• To identify the relationship between BRAM, BRSM and behavioural implications | 18 | Pre-processing, First Level Analysis, Second Level Analysis | Matlab R2011a<br>SPM8 | P1, P2, P3<br>H3a, H3b |
| 3 | Expert Judgement Panel (Section 4.5.1) | • To validate the BRAM scale<br>• To examine relationships between BRAM, BRSM, self-brand congruence and affective brand commitment | 6 | Measure Development: Judge's agreement percentage | MS Excel 2007 | N/A |
| 4 | Pilot Test (Section 4.5.2) | | 75 | Measure Development: Inter-item correlation analysis | SPSS 17.0 | N/A |
| 5 | Main Survey (Section 4.5.3) | | 303 | Measure Purification : EFA (n=150)<br>Measure Validation: CFA, Reliability and validity (n=153)<br>Testing of Propositions/Hypotheses : Second order CFA, Structural Equation Modelling (n=303) | SPSS 17.0<br>LISREL 8.80 | P4<br>H1, H2,<br>H3a, H3b, H4 |

# Chapter 5 : RELIABILITY AND VALIDITY

# Considerations of Multiple Methods

## 5.0 Introduction

Chapter 4 discussed the methodology adopted to address all propositions and hypotheses in the study. A summary of key propositions and hypotheses addressed by each empirical study is reproduced in Table 5-1 below. This chapter mainly discusses the reliability and validity measures of these three main empirical studies.

Table 5-1: Propositions and hypotheses measured by three empirical studies

| **Study** | | **Overall Objective** | **Tested Propositions and Hypotheses** |
|---|---|---|---|
| 1. | Qualitative Interviews | • To discover whether and how BRAM exist in consumer psychological structures<br>• To identify the behaviours of BRAM and BRSM | P1, P4<br>H3a, H3b |
| 2. | fMRI Experiment | • To examine neural correlates of BRAM and BRSM.<br>• To identify the relationship between BRAM, BRSM and behavioural implications. | P1, P2, P3<br>H3a, H3b |
| 3. | Main Survey | • To validate the BRAM scale.<br>• To examine relationships between BRAM, BRSM, self-brand congruence (SBC) and affective brand commitment (AFBC). | P4<br>H1, H2, H3a, H3b, H4 |

This chapter consists of three main sections; Section 1 discusses the trustworthiness of qualitative interviews, Section 2 discusses the pre-processing measures of the fMRI experiment and Section 3 discusses measure purification and validation measures of survey data. The chapter structure is given in the following Figure 5-1.

Figure 5-1: Chapter Five organisation structure

| **Section 5.1**<br>**Qualitative Interviews** | **Section 5.2**<br>**fMRI Experiment** | **Section 5.3**<br>**Survey** |
|---|---|---|
| **5.1.1** Credibility | **5.2.1** Experimental Design | **5.3.1** Purification of BRAM Attributes |
| **5.1.2** Transferability | **5.2.2** Data Acquisition Techniques | **5.3.2** Validation of BRAM Attributes |
| **5.1.3** Confirmability and Dependability | **5.2.3** Data Analysis Strategies | **5.3.3**. Validation of BRSM |
| | | **5.3.4** Validation of SBC |
| | | **5.3.5** Purification and Validation of AFBC |

## 5.1 Qualitative interview data

Qualitative interviews were conducted as the first phase of data collection strategy aiming to explore the following research questions.

1. Do brands exist in consumer AM and/or SM?
2. How do consumers remember brands in AM?
3. What brands/product categories are associated in AM?
4. Do BRAM predict brand preferences and/or brand commitment?

As detailed in Chapter 4 (Section 4.3.6), interviews with 22 informants were transcribed and coded using Nvivo 8.0, reporting 107 brand memories. Based on the above investigation areas, tree nodes were created in Nvivo and each description was referenced under relevant themes after transcribing all audio interviews into Nvivo.

Reliability and validity remain appropriate concepts for attaining rigour in qualitative research (Bashir, Afzal and Azeem 2008). As Patton (2000) posited, the credibility of qualitative research depends on validity and reliability, and Patton posited three areas in assessing the credibility: techniques and methods used to ensure integrity; validity and accuracy of the findings in assessing credibility; and the experience and qualification the researcher brings to the study and the assumptions that underpin the study. As Shenton (2004) stated, positivists often question the trustworthiness of qualitative research, perhaps because the concepts of validity and reliability are unable to be addressed comprehensively in the same way as in naturalistic work.

Lincoln and Guba (1985) proposed four criteria to be used by a positivist researcher in pursuit of a trustworthy study, and these are given below;

1. Credibility (in preference to internal validity)
2. Transferability (in preference to external validity/generalisability)
3. Dependability (in preference to reliability)
4. Confirmability (in preference to objectivity)

Many authors (Sinkovics, Penz and Ghauri 2008; Shenton 2004; Golafshani 2003) have accepted these criteria for determining the trustworthiness of a qualitative study. The following Sections 5.1.1 to 5.1.4 discuss how the above criteria have been met in implementing this study.

### 5.1.1 Credibility

In addressing internal validity, the study should measure what it is intended to measure. In accordance with Lincoln and Guba (1985), the following steps were taken in designing and implementing qualitative interviews to ensure the credibility of the study.

a. Adopting well established research methods

This refers to applying methodologies that have been successfully utilised in previous comparable research projects. Braun-LaTour, LaTour and Zinkhan (2007) recommended a guided session to uncover memory stories where participants were requested to tell about brand memories. Importantly memory surfing techniques should allow relaxation and visualization (Braun-LaTour 2007) because the interpretation of memory stories is discovery-oriented in nature (Wells 1993).

b. Random Sampling

Although qualitative research involves the use of purposive sampling, a random approach tends to negate charges of researcher bias in the selection of participants (Shenton 2004). As Preece (1994) notes, random sampling also helps to ensure that any unknown influences are distributed evenly within the sample. However, as the researcher has no control over the choice of informants, it is possible that quiet, uncooperative or inarticulate individuals can be selected. Thus, a purposive sampling technique was utilised in the study that enabled co-operative responses and reliability from known participants.

c. Triangulation

Triangulation involves the use of different methods in qualitative research. As Brewer and Hunter (1989) argue, the use of different methods compensates for their individual limitations and exploits their respective benefits. Triangulation can be implemented in different ways; using the same documents in multiple studies, using multiple studies and using a wide range of informants (or known as triangulating via data sources). As discussed in Chapter 4 (Section 4.2), three empirical studies were implemented in the study, constituting a methodological triangulation strategy. Although different participants (samples) have been employed across the three studies, the same sample characteristics have been used to maintain the consistency of findings and enable generalising across the sample population.

d. Tactics to help ensure honesty from participants

In order to ensure the participants' honesty, several tactics were followed.

Before interviews were conducted, each participant was given every opportunity not to participate or to refuse participation in the study, so that it was assured that the data collection sessions involved only those who were genuinely willing to take part and prepared to offer data freely. At the start of the interview, the researcher aimed to establish a good rapport and tried to maintain it throughout the session. It was also made clear to the participants that they had the right to withdraw from the study at any point, and they would not even be required to disclose an explanation to the investigator.

e. Frequent debriefing sessions

Several debriefing sessions were conducted with the Director of Studies to discuss the interview guideline, interview procedures, participant profile, and reporting initial interviews. This was particularly important to identify minor flaws in administering interviews.

f. Peer scrutiny of the research project

Colleagues in the marketing department offered their feedback on the interview process, and the coding procedures, obtaining an agreement of 75%. Importantly, the fresh perspective such individuals offered was important for the investigator as closeness to the project frequently inhibits the researcher's ability to view it with real detachment.

g. Thick description of the phenomenon under scrutiny

Informants were allowed to talk freely about their brand memories without enforcing any constraints or limitations, and thereby interviews attempted to gather detailed thick descriptions about the phenomenon. As Shenton (2004)

argues, this is an important provision for promoting credibility as it helps to convey the actual situations that have been investigated, and to an extent, the contexts that surround them. Without this insight, it is difficult for the reader of the final account to determine the extent to which the overall findings are true.

### 5.1.2 Transferability

The positivist approach demonstrates that the results of findings can be applied to a wider population. However, as the findings of a qualitative project are specific to a small number of particular environments and individuals, it is impossible to demonstrate that these findings and conclusions are applicable to other situations and populations (Shenton 2004). Therefore, a full description of all the contextual factors impinging on the inquiry is recommended (Guba and Lincoln 1985). Further, Cole and Gardner (1979) highlighted the importance of the researcher's conveying to the reader the boundaries of the study. This additional information must be considered before any attempts at transfer are made. Thus, information on the following areas was given at the outset for each data collection strategy (in Chapter 4, Sections 4.3.3, 4.3.5 and 4.3.6).

1. The number of informants and their detailed demographic profile.
2. The data collection methods that were employed.
3. The number and length of the data collection sessions.
4. The time period over which the data was collected.

### 5.1.3 Dependability and confirmability

In ensuring the dependability of qualitative interviews (to address the issue of reliability), Lincoln and Guba (1985) suggest reporting the research design in

detail. The research design of interviews has been detailed comprehensively in Chapter 4 (Section 4.3) complying with this dependability criterion. Importantly a semi-structured interview guide assured the consistency of gathering the same data from all informants, and all interviews were audio taped so that there is less chance of information omission.

Confirmability deals with the objectivity of data that does not depend on human skill and perception (Patton 1990) although Patton recognises the difficulty of ensuring real objectivity. This is mainly because the intrusion of the researcher's biases is inevitable in human designed tests and questionnaires. In qualitative research, every possible step must be taken to ensure that the findings are outcomes of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher (Shenton 2004). In this concern, qualitative interviews were conducted through a semi-structured interview guideline developed based on a thorough literature review of the area that is completely independent from the researcher's viewpoint.

In particular, the coding procedure confirmed the objectivity of the study. The verbatim reports of the memory stories, initial thoughts and feelings served as the primary data in which categories and relationships were identified. An extensive and structured process used to identify the key themes that were based on the literature review (Dey 1999). The researcher looked for deep metaphors (Johnson 1987), latent meaning and affect (Barakett 1999), and the generic action event (Barsalou 1988) in each of the memory stories. In addition, some specific quantitative coding of the stories occurred in investigating the dimensionality of BRAM. An independent expert also categorised BRAM into

three categories (i.e. specificity, vividness and affect) obtaining a 75% agreement.

## 5.2 FMRI experiment data

FMRI experiments were conducted as the second phase of the data collection strategy aiming to test the propositions and hypotheses detailed in Table 5-1 in p. 184 (i.e. P1, P2, P3, H3a and H3b). As detailed in Chapter 4 (Section 4.4), 18 subjects participated in the study and the data were analysed using Statistical Parametric Mapping (spm8) running on the Matlab R2011a software. As Chein and Schneider (2003) stated, development of a successful fMRI experiment requires careful attention to experimental design, data acquisition techniques and data analysis strategies. The following Sections 5.2.1, 5.2.2 and 5.2.3 discuss the reliability and validity measurements taken in fMRI experimental design, data acquisition and data analysis.

### 5.2.1 Experimental design

As fMRI does not measure absolute neural activity, neuroimaging studies must be designed carefully to quantify relative changes of activity. Because the brain is constantly engaged in several controlling tasks such as respiration, heartbeat etc, subjects should be scanned while at rest or while performing a simple baseline task (Gusnard and Raichle 2001) in order to measure the specific task-related activity. Thus, to keep participants 'on-task', they were asked to identify what kind of memory they had for each brand name displayed, and instructed to respond through the response box (i.e. lifetime personal memory, attributes of the brand and no or little memory as already discussed in Section 4.4.9) and rest in between the display of brand names.

In a block design, two or more conditions are alternated in blocks. Each block has duration of a certain number of fMRI scans, and within each block, only one condition is presented. Grabowski and Damasio (2000) posited that block designs offer considerable statistical power. Statistical power represents the ability of an experiment to reject the null hypothesis when the null hypothesis is indeed false (Cohen 1977). In fMRI experiments, this ability is commonly discussed in terms of the number of subjects that will be scanned and the design of the task that will be administered, including the volume of data that will be acquired from each subject. More subjects and greater volume almost always contribute to increase the statistical power (Bennett and Miller 2010).

The following steps have been taken in order to maximise the statistical power of the experiment.

a. Eighteen subjects have participated in the study. This is well above the acceptable sample size in neuroimaging studies as 12 is considered as an acceptable sample size (Desmond and Glover 2002).
b. As Miyapuram (2008) explained, in conducting a hypothesis-based experiment, it should be possible to attribute any observed effects to experimentally manipulated conditions. This can be guaranteed only if conditions are randomly allocated to a presentation order for each subject in a sensible manner. Further, this randomisation should be appropriately balanced, both across and within subjects. With such random allocation of conditions, any unexpected effects are randomly scattered among the conditions, and therefore do not affect the designed effects. In complying with this, six brands have been considered for each condition, having 24

brands in the stimuli paradigm design, which alternated the order of presentation from one subject to the other.

c. Three repeated sessions were implemented with the same paradigm stimuli to increase the statistical power.

### 5.2.2 Data acquisition

In acquiring data from fMRI, one area of attention is to improve the signal-to-noise (SNR) and contrast-to-noise (CNR) ratios of the data collection (Miyapuram 2008). As Simmons et al. (2009) and Zou et al. (2005) recommended, experiments were conducted on a 1.5 Tesla magnet with a quadrature head coil to have enormous gains in SNR that can be made by moving to 3.0 Tesla or higher and using a parallel-acquisition head coil.
One drawback to this fMRI experiment method is that the signal is very sensitive to signal drift, such as head motion etc. In order to minimise this head motion, a tight but a comfortable padding was placed around the subject's head using the standard head coil, and ear plugs were provided to minimise high noise levels inside the scanner.

### 5.2.3 Data analysis

As mentioned in the Methodology Chapter (Section 4.4.10), fMRI data analysis was conducted in different stages; pre-processing and statistical analysis (first level and second level) and the following sections demonstrate the reliability and validity in the fMRI data analysis process.

#### 5.2.3.1 Spacial pre-processing

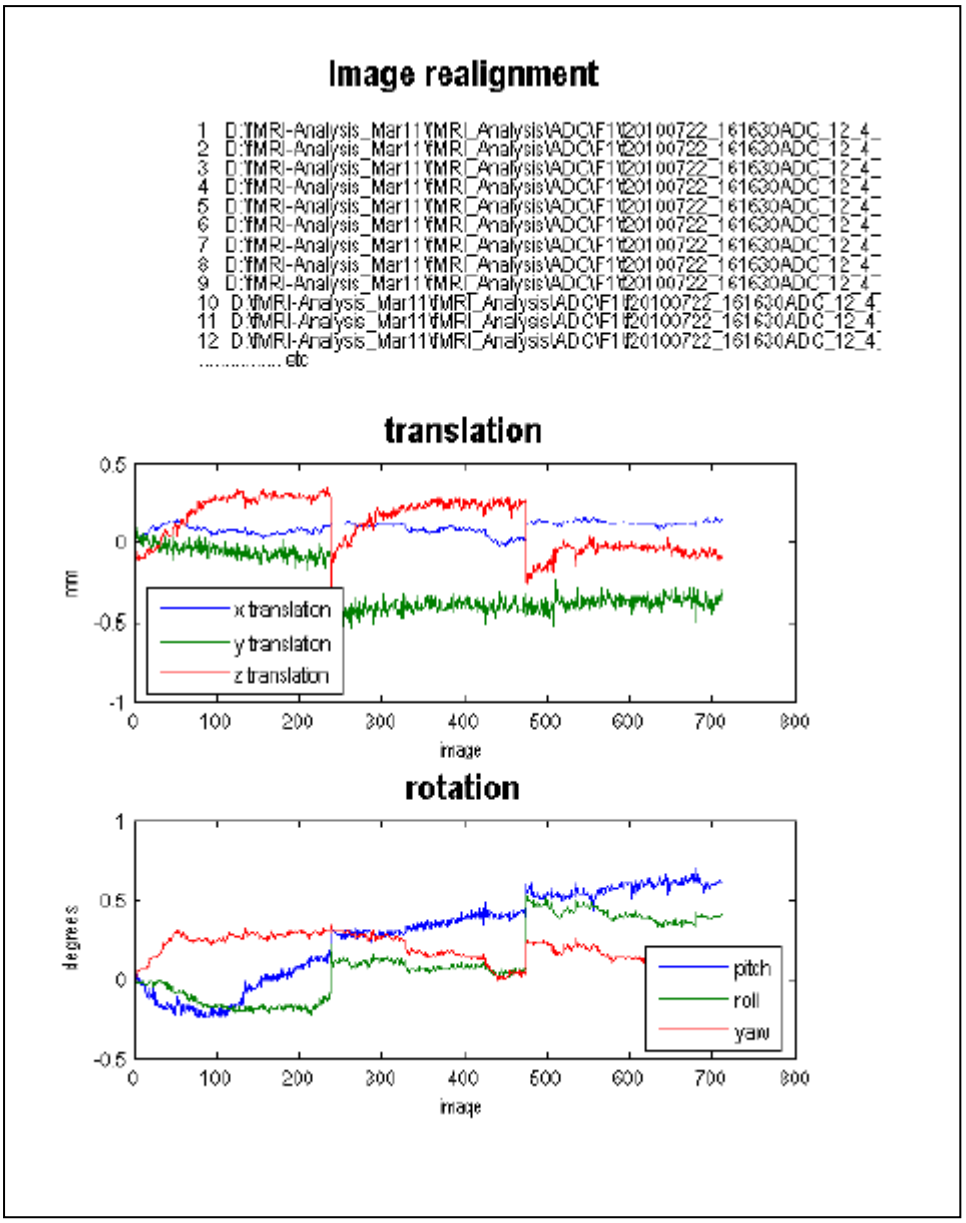
The main goal of pre-processing is to reduce non-task-related (uninteresting) variability in the data. The following steps were followed for each individual separately in spatial pre-processing, and this process is demonstrated through the images of one subject.

a. Realignment (movement correction)

In functional imaging, the signal changes due to any hemodynamic response. This can be small compared to signal changes that can result from subject motion. So, prior to performing the statistical tests, it is important that the images are as closely aligned as possible. Although the subjects are asked to keep their heads still, movement does occur. This realignment algorithm follows a rigid-body registration procedure (Friston et al. 1995a). A rigid body can have a linear translational movement or a rotational movement in each of the three directions (X, Y and Z). Correspondingly, there are six parameters that need to be estimated (X, Y, Z translations, pitch, roll and yaw).

In the realign job, realigned images are written into the directory where the functional images are. These new images are prefixed with the letter 'r'. SPM then plots the estimated time series of translations and rotations shown in Figure 5-2 (p.196). No participant displayed more than a millimetre of movement or a degree of rotation from the reference image. Thus no datasets had to be discarded because of excessive within-scan movement confound.

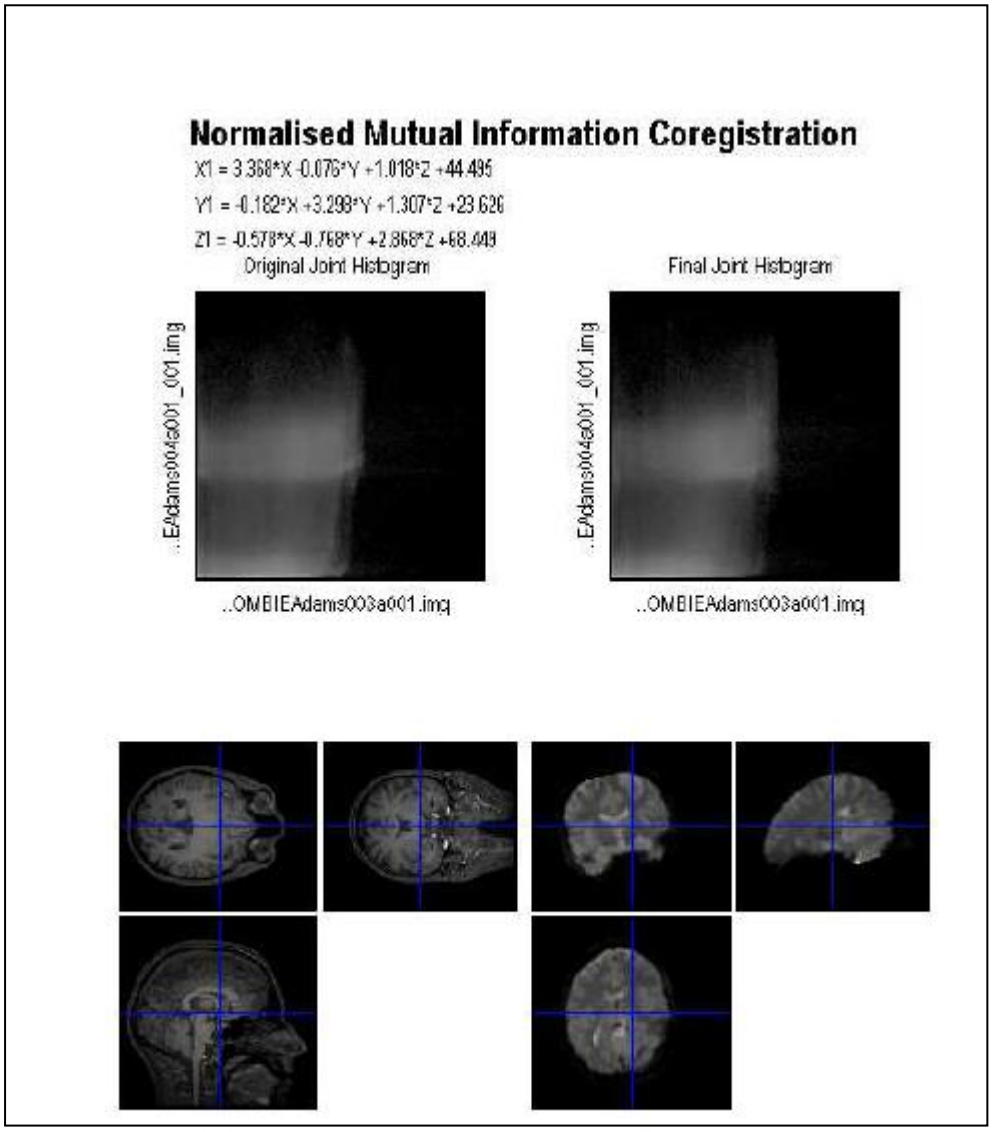
Figure 5-2: Realignment of individual brain images



b. Spatial normalization

As discussed in the Methods Chapter (Section 4.4.10.1), in this task, images are fitted to a standard brain template (Montreal Neurological Institute template), in order to make inter-individual comparisons, and combine data from several subjects. The normalised image is shown below in Figure 5-3.

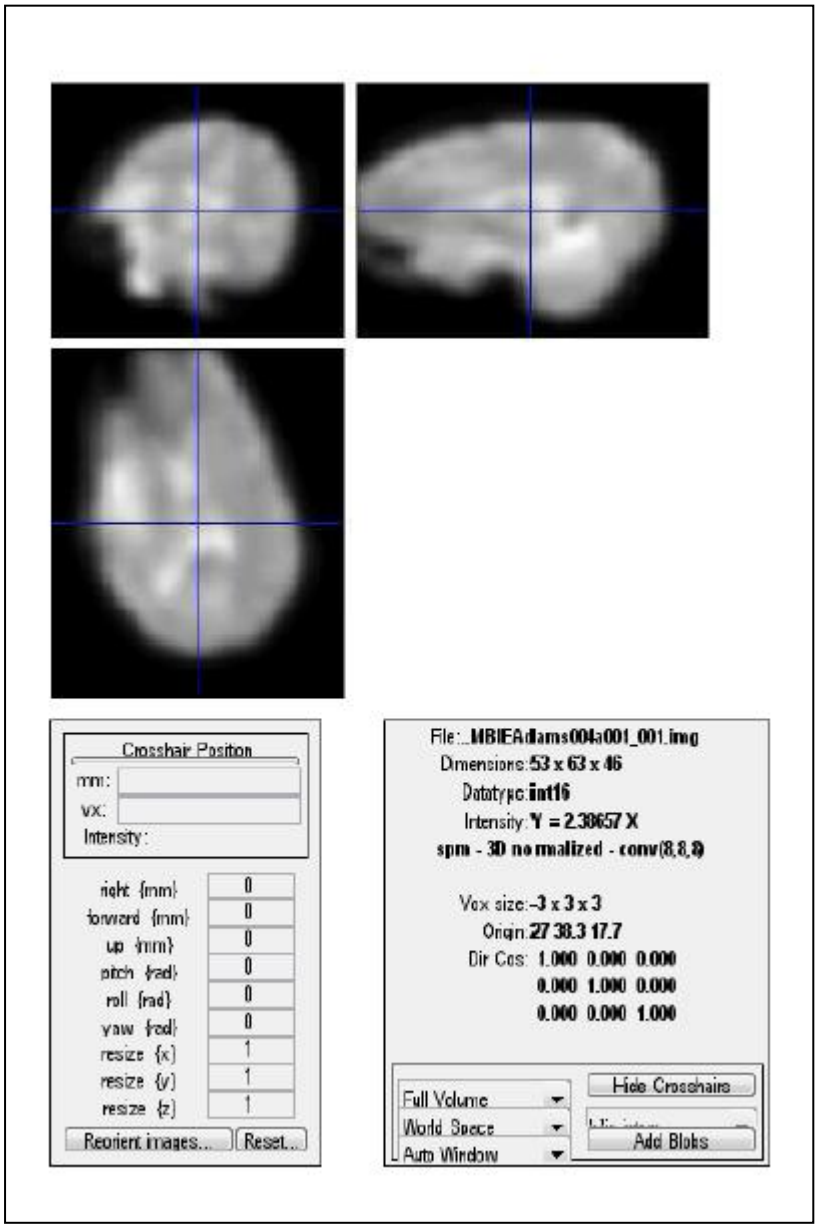
Figure 5-3: Normalised mutual information coregistration image



c. Spatial smoothing

Smoothing is performed to compensate for any residual between-subject variability after normalization. Smoothing also permits the application of Gaussian random field theory at the statistical inference stage. An image after spatial smoothing ready for the statistical analysis is shown in Figure 5-4 below.

Figure 5-4: Brain image after spatial smoothing



5.2.3.2 Statistical analysis

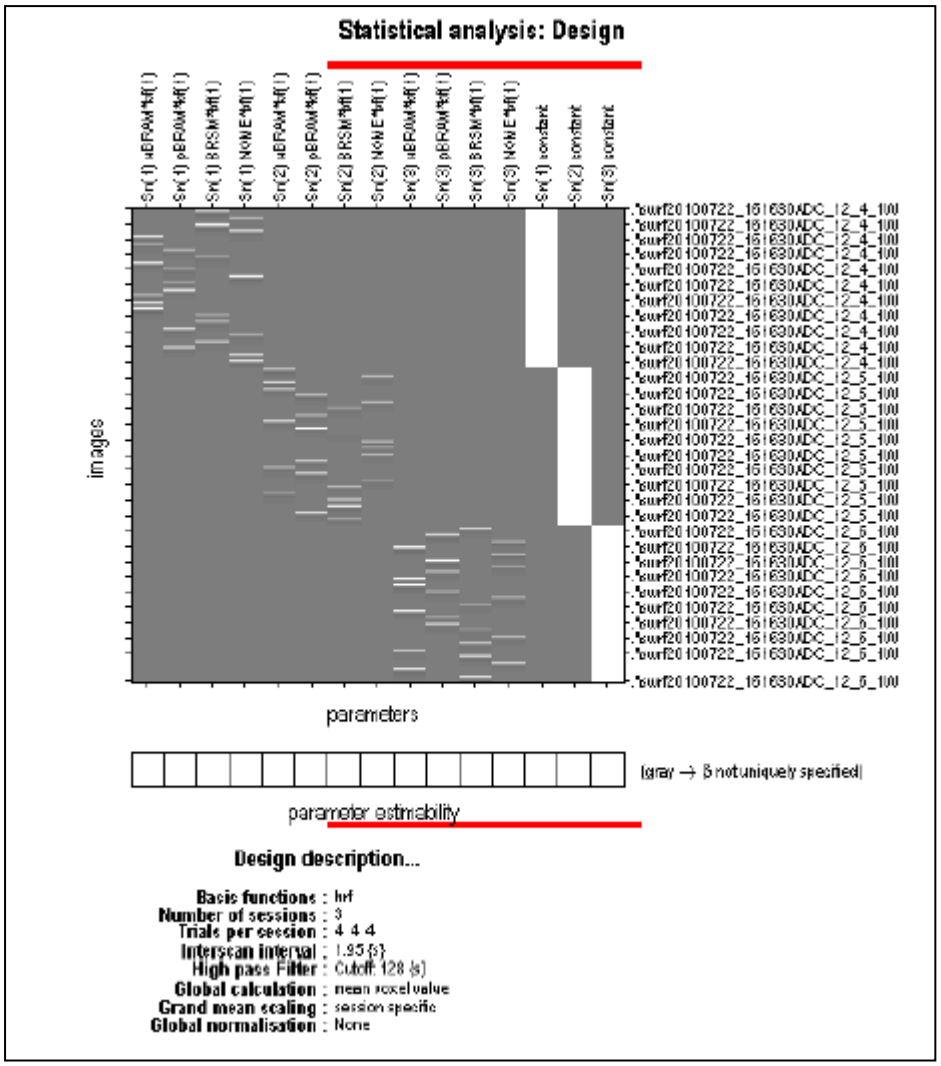
The following sections discuss the model specification process (i.e. first level and second level) conducted in the study to establish the reliability and validity of the fMRI data analysis process.

a. First level model specification, estimation and results

The design matrix for all four conditions in three trials is shown in Figure 5-5 (p. 200) for each individual. As explained in the Methods Chapter (Section 4.4.10.2), the first level model was specified for each subject using different GLMs for each subject, typically, one design matrix per subject. Here within-subject variability across condition onsets is represented across rows.

Following on from estimation of this model against the neuroimaging data, 'within-memory type' contrasts were performed to isolate the patterns of regional brain activation associated with our four manipulations of brand-related memory (uBRAM, pBRAM, BRSM, NOME). Figure 5-6 (p. 201) shows the results of one contrast condition (i.e. uBRAM) in glass-brain maximum intensity projection (MIP) and a list of activated voxels.

Figure 5-5: Results of the first level analysis




b. Second level model specification, estimation and results

As the sample size in the sample was relatively large, random-effects ('second-level') analysis was implemented (Friston, Holmes and Worsley 1999), so that inferences can be made beyond the sample involved in the study (Penny, Holmes and Friston 2003). Following estimation of this model against the neuroimaging data, 'within-memory type' contrasts were performed to isolate the patterns of regional brain activation associated with our four manipulations of brand-related memory (uBRAM, pBRAM, BRSM, NOME). Figure 5-7 (p. 202)

shows regional brain activation associated with the four manipulations of uBRAM, pBRAM, BRSM and NOME for the total sample.

Figure 5-6:First level analysis – regional brain activation

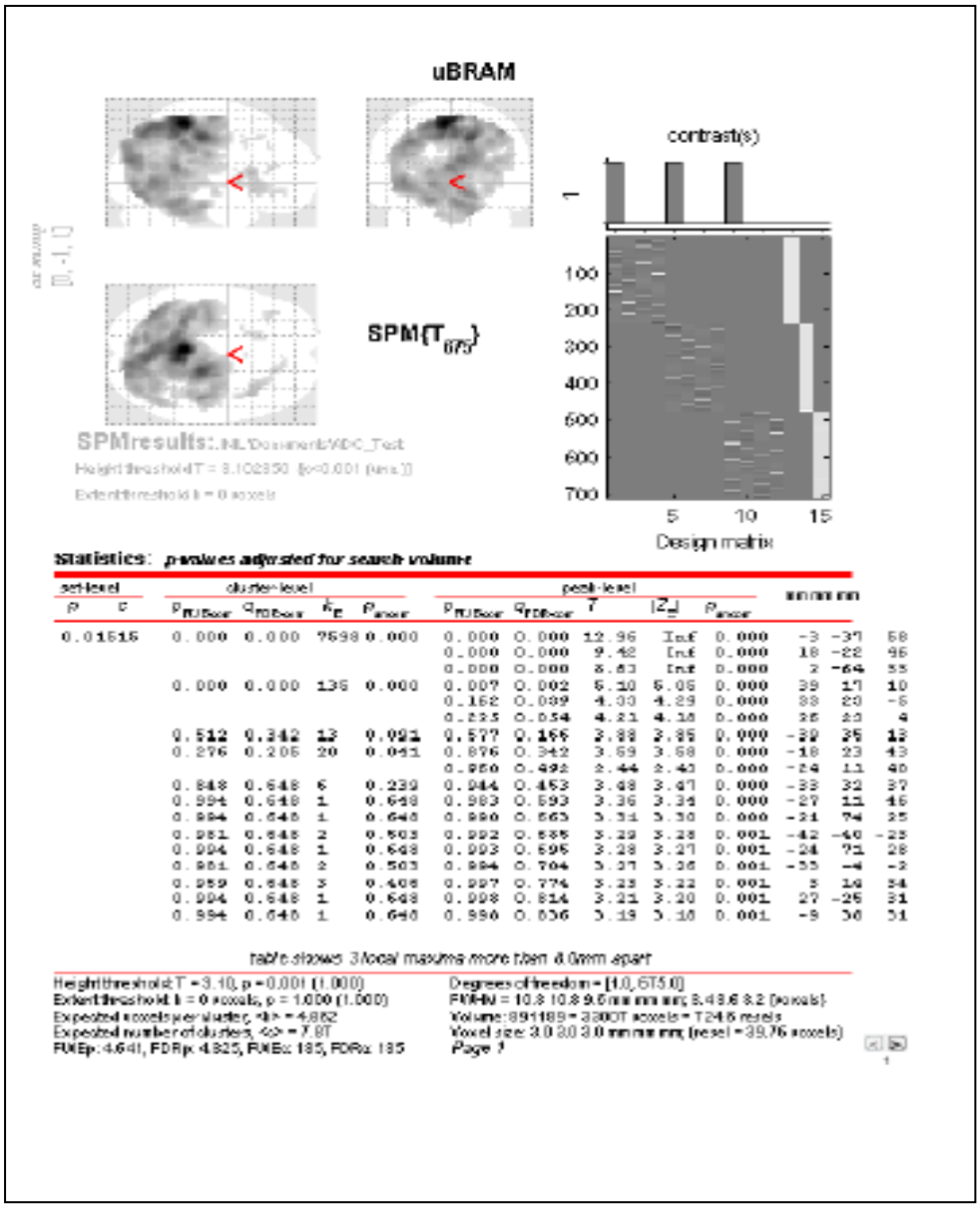
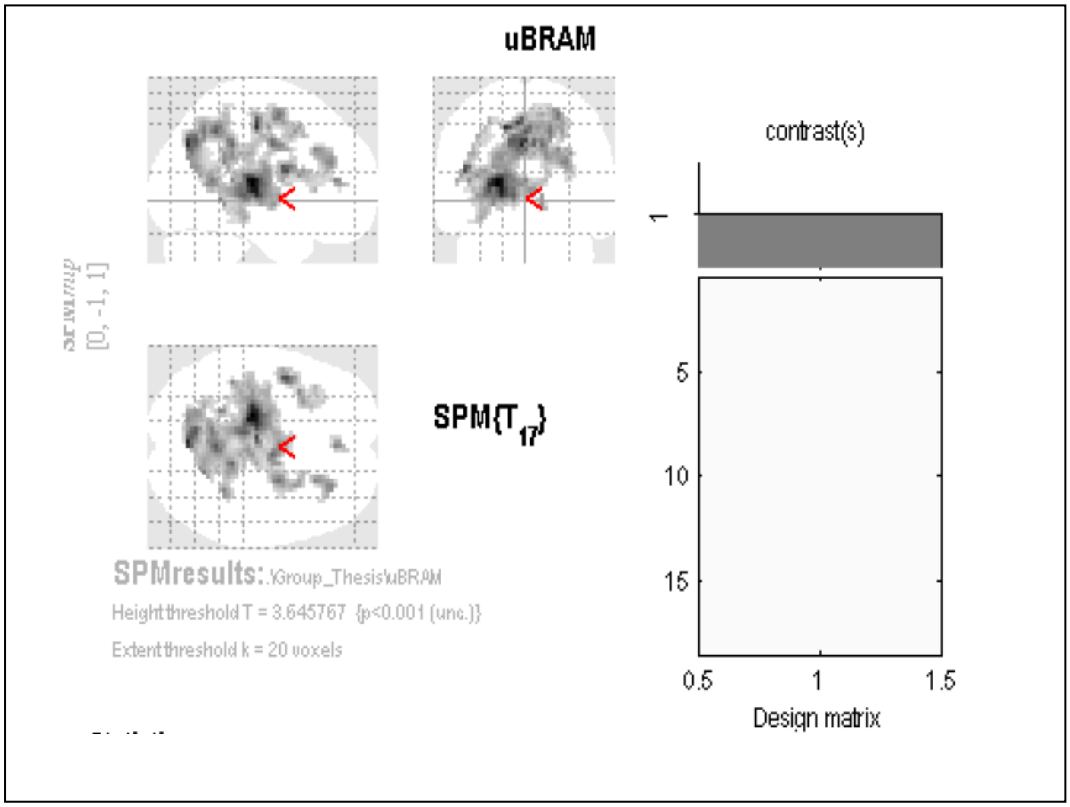
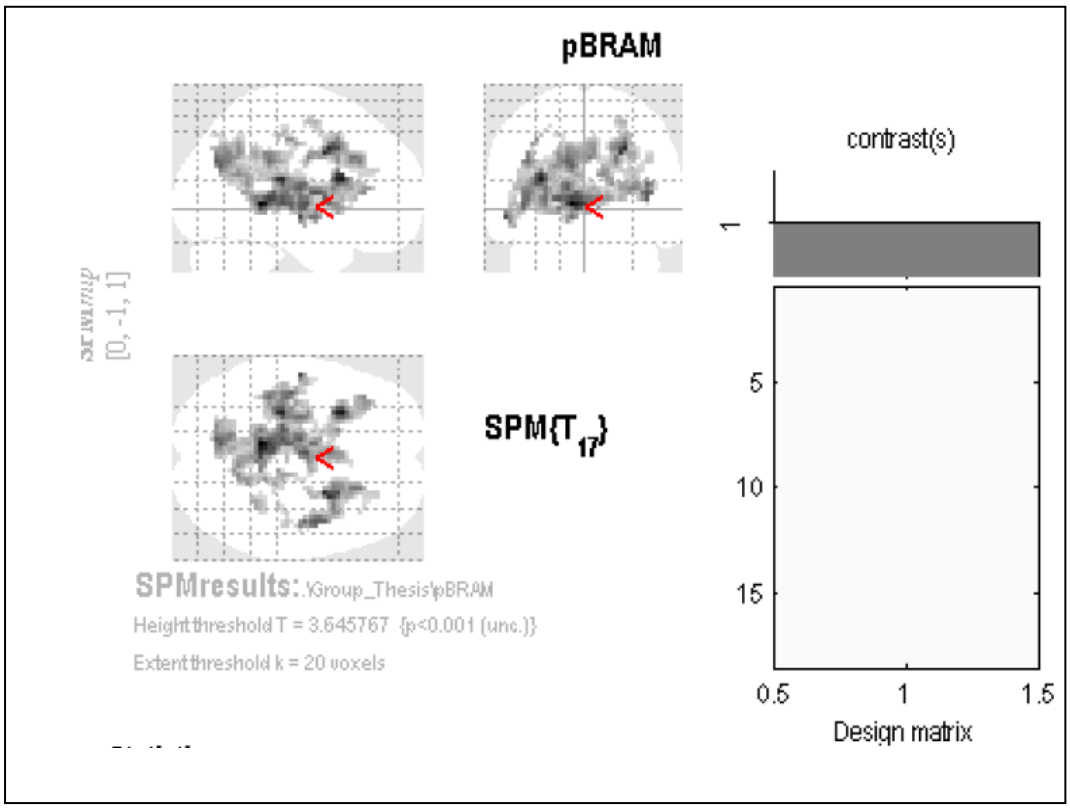


Figure 5-7: Regional brain activation for uBRAM, pBRAM, BRSM and NOME

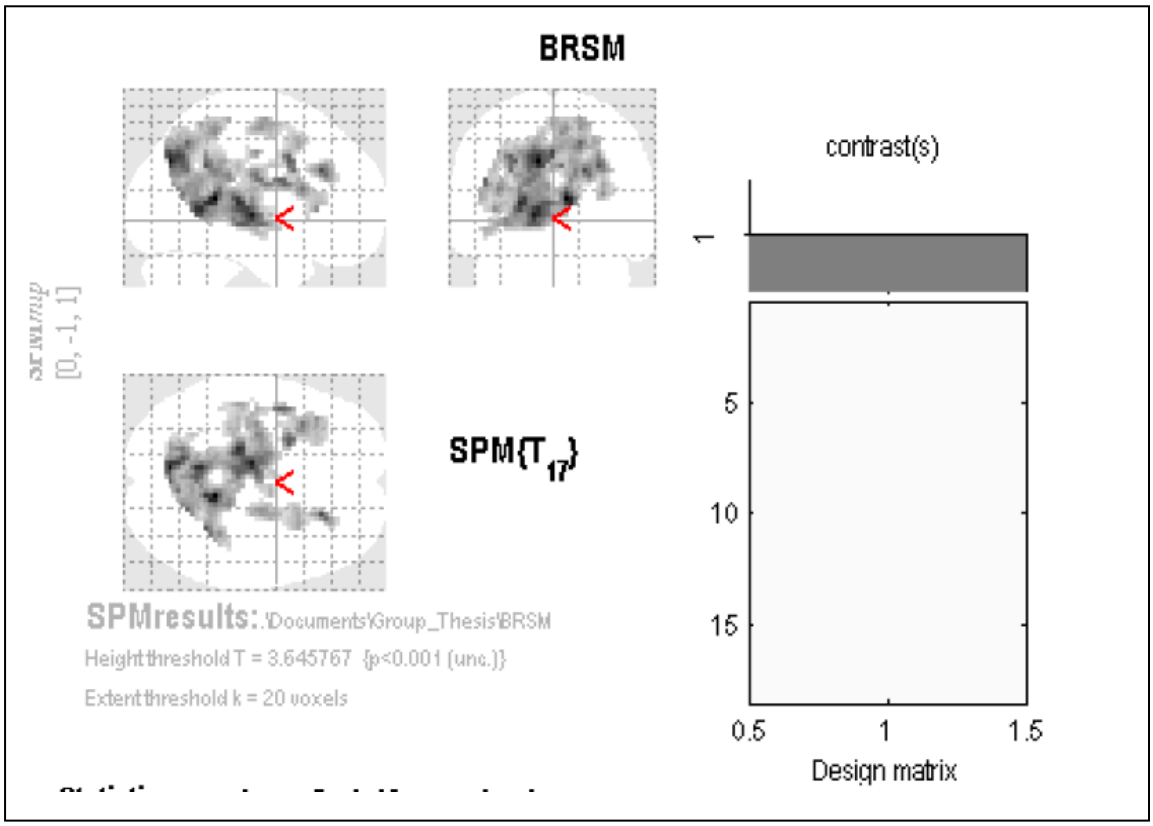
a. uBRAM



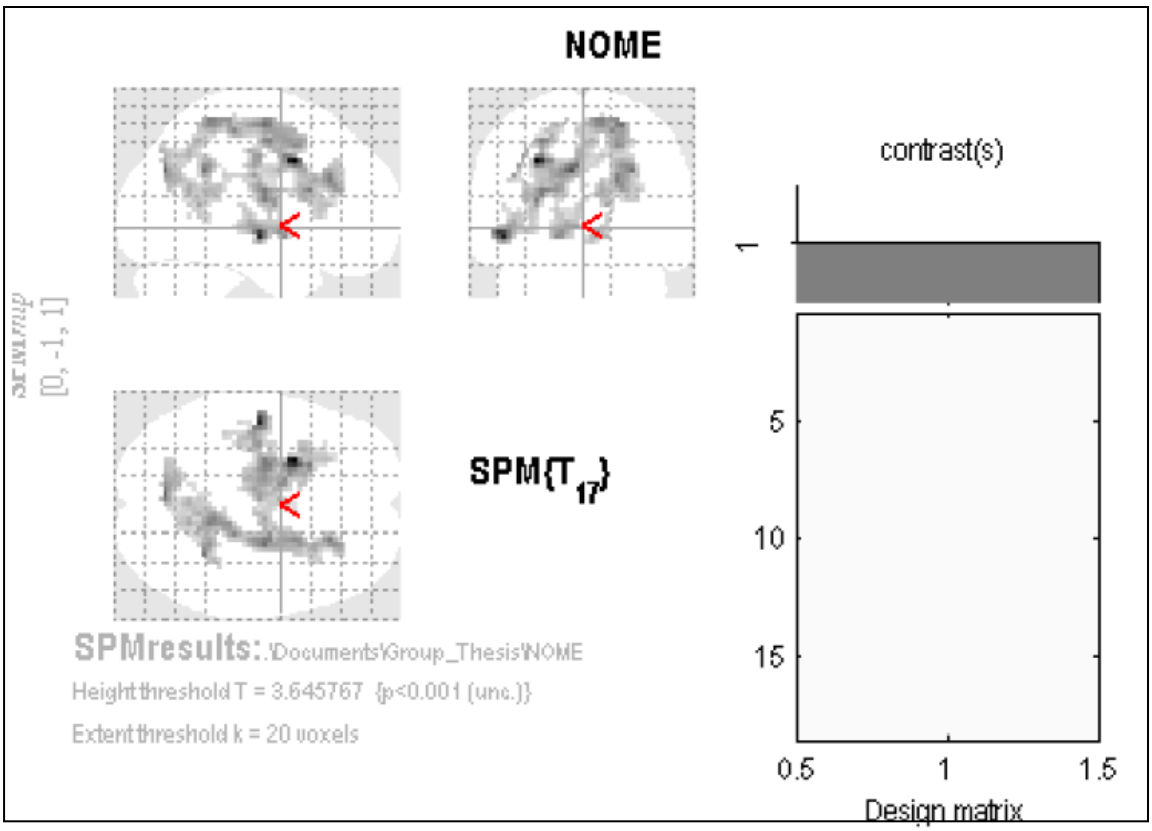

a. pBRAM



c. BRSM


BRSM
contrast(s)
1
5
10
15
0.5
1
1.5
Design matrix
SPM{T17}
SPMresults: \Documents\Group_Thesis\BRSM
Height threshold T = 3.645767 {p<0.001 (unc.)}
Extent threshold k = 20 voxels

d. NOME


NOME
contrast(s)
1
5
10
15
0.5
1
1.5
Design matrix
SPM{T17}
SPMresults: \Documents\Group_Thesis\NOME
Height threshold T = 3.645767 {p<0.001 (unc.)}
Extent threshold k = 20 voxels

Finally, as discussed in the Methods Chapter (Section 4.4.10.2), the Yale non-linear MNI to Talairach Coordinate Converter http://www.bioimagesuite.org/Mni2Tal/index.html) was employed to transform the MNI coordinates produced by SPM back to Talairachspace (http://www.talairach.org/about.html) to enable neuro-anatomical localisation according to this atlas (Talairach and Tournoux 1988). These results are used to test the relevant propositions and hypotheses discussed in the Results Chapter.

## 5.3 Survey data

Chapter 4 discussed the methodology of survey in detail together with the BRAM scale development process including expert judgement panel and the pilot study. This section focuses on BRAM scale purification and validation in detail. The scale validation process of the other constructs in the measurement model (BRSM, self-brand congruence and affective brand commitment) is also discussed in this section. The structure of this section is organised as per Figure 5-1 given at the beginning of this chapter. Sections 5.3.1 and 5.3.2 discuss the main focus of the study, purification and validation measures of three attributes (Specificity, Vividness, Affect) of BRAM, which is identified as the independent variable in the proposed conceptual model. Sections 5.3.3 and 5.3.4 discuss the validation process of BRSM and self-brand congruence (SBC) identified as moderating variables, while Section 5.3.5 is devoted to purifying and validating the dependent variable, affective brand commitment (AFBC).

### 5.3.1 Measure purification: Specificity, Vividness and Affect

Table 5-2 (p. 206) outlines the definition of each construct associated with BRAM. The initial stage of the measure development process through item generation and expert judgement was explained in the Chapter 4 (Section 4.5.1 and 4.5.2) and the rest of the process is discussed in the next sections.

Table 5-2: Operational definitions of BRAM attributes

| **Construct** | **Operational Definitions** |
|---|---|
| Specificity | Recalling contextual information related to brand-related autobiographical memory (BRAM) reconstructed through a hierarchical retrieval process including when, where, and how this has happened. |
| Affect | Reconstruction of feelings, mood or emotions experienced in BRAM and/or brand. |
| Vividness | Mental reconstruction of brand- related personal memory (BRAM) in visual, tactual, auditory, gustatory, and olfactory senses. |

The objective of this section is to show the step-by-step process in the BRAM scale development procedure. Three constructs were considered as dimensions of BRAM; Specificity, Affect, Vividness and they were all included in the analysis. A total sample of 150 was used in the measure purification stage.

#### 5.3.1.1 Assessing the reliability: Specificity, Vividness and Affect

In order to measure the attributes of BRAM, three dimensions were included in the study, having 9 items for specificity, 9 items for vividness and 11 items for affect.

In assessing the reliability of BRAM dimensions, Cronbach's Alpha, inter-item correlations and corrected total item correlations were examined before proceeding to the unidimensionality explorations (EFA). Although items that showed inter-item correlations below 0.3 and corrected item-total correlation below 0.4 were eliminated from further analysis, in exceptional situations where reliability of Cronbach's Alpha was above 0.8, those items were retained for the next level analysis.

Exploratory Factor Analysis (EFA) was conducted on the above items to explore the dimensionality of BRAM attributes. Initially unidimensionality was assessed for each attribute and then simultaneously for all three attributes. Sample adequacy was tested using the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-test) and according to Field (2000:446) and Hutcheson and Sofroniou (1999), the value should be greater than 0.5. The multicollinearity of dimensions was examined through the determinant of the R-matrix, which Field (2000:445) recommended should be greater than 0.00001 to avoid the multicollinearity of data. Factor loading should also be above 0.45 to be accepted.

In the simultaneous analysis, the correlation matrix was investigated for extreme multicollinearity (above 0.9) and singularity (below 0.3) in addition to the Bartlett's Test of spherity. The sample adequacy was 0.623 with the sample used (n=150) at the 0.05 significance level. The determinant of the R-matrix reported a value of 1.23E- 005 (greater than 0.00001) and therefore multicollinearity was not a problem. The total variance explained for the three factors was 80.666% with this data for further analysis.

Table 5-3 (p. 208) presents the statistics of the items of the measure purification stage. Please refer to Appendix 5.1 for a complete report of the scale purification process.

Table 5-3: BRAM attributes –measure purification statistics

| Scale Item | | Factor Loading | Mean | Standard Deviation |
|---|---|---|---|---|
| **Specificity** | | | | |
| SPE4 | I can remember my age when this brand memory happened. | .937 | 4.6000 | .49154 |
| SPE6 | I can remember the detailed story of what happened. | .861 | 4.5000 | .50168 |
| SPE1 | I feel that I travelled back to the time when it happened. | .794 | 4.1000 | .94656 |
| SPE2 | I can actually remember it rather than just knowing that it happened. | .581 | 4.6000 | .49154 |
| Cronbach's Alpha | | | | 0.822 |
| Total variance explained | | | | 60.104% |
| KMO | | | | 0.721 |
| Bartlett's Test of Sphericity | | | | 374.376 df 10 p=.000 |
| **Vividness** | | | | |
| VIVI8 | The images that come to mind is clear. | .940 | 4.3933 | .50363 |
| VIVI1 | I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur. | .889 | 4.4000 | .49154 |
| VIVI6 | I can picture the brand. | .876 | 4.5067 | .50163 |
| Cronbatch's Alpha | | | | 0.847 |
| Total variance explained | | | | 61.698% |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | | | 0.644 |
| Bartlett's Test of Sphericity | | | | 624.748 df 15 p=.000 |
| **Affect** | | | | |
| AFF7 | Is important to me. | .906 | 3.0000 | 1.18718 |
| AFF8 | Is not a significant memory to me (RC). | .897 | 3.3000 | 1.34987 |
| AFF10 | Is not worth remembering (RC). | .835 | 4.0000 | 1.00335 |
| AFF3 | I feel the same particular emotions I felt at the time of the event. | .814 | 2.9000 | .94656 |
| Cronbatch's Alpha | | | | 0.899 |
| Total variance explained | | | | 66.243% |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | | | 0.648 |
| Bartlett's Test of Sphericity | | | | 975.640 df 21 p=.000 |

### 5.3.2 Measure validation: Specificity, Vividness and Affect

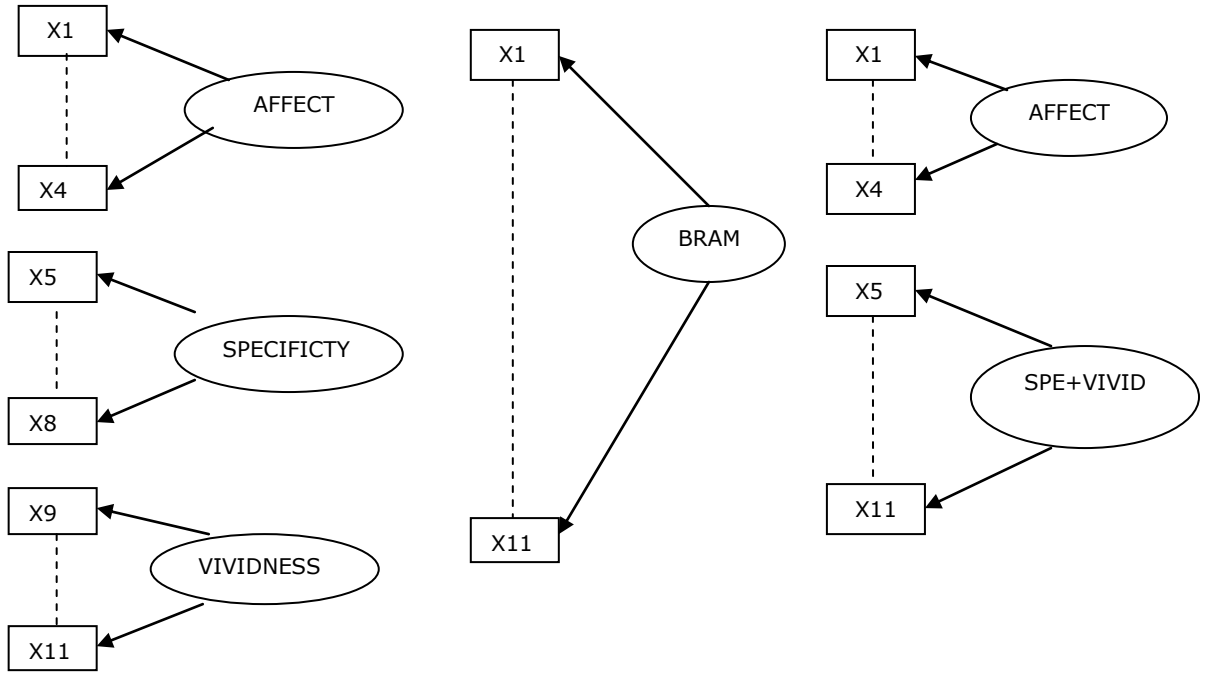
As discussed in the Methodology, measure validation for the three factors was conducted using Confirmatory Factory Analysis (CFA) with a different sample of 153. LISREL 8.80 was used to assess the reliability and validity of the measures. Initially several alternative models were specified to select the best fitting model (or the measurement model).

This section discusses the various steps followed in assessing the measurement model, including specification of alternative models, evaluation of model fits and selecting the model, model modification, and assessing the reliability and validity.

#### 5.3.2.1 Specifying alternative models

As the first step, alternative relationships between observed and latent variables were stated and by stating alternative relationships, the strong relationships between items and dimensions were determined. Thus, along with the hypothesised relationships, different alternative relationships were examined together with the other possible relationships. Model A shows the hypothesised model with three factors (specificity, vividness and affect) while alternative model B considers all dimensions as one factor and model C considers two factors (specificity + vividness and affect, which is sensible to develop a theoretical argument). These three models are depicted in Figure 5-8 (p. 210).

Figure 5-8: Alternative measurement models for BRAM attributes




**Model A** **Model B** **Model C**

5.3.2.2 Evaluation of model fit

The alternative models shown in the above figure were tested statistically using LISREL 8.80 (Joreskog and Sorbom 1993). Relevant statistics related to the alternative models are given in Table 5-4 (p. 211).

Table 5-4: Statistics of BRAM alternative measurement models

| Fit Indices | Criteria | Model A 3 factors (S,V,A) | Accept-ability | Model B 1 factor | Accept-ability | Model C 2 factors (V+S, A) | Acceptability |
|---|---|---|---|---|---|---|---|
| d.f. | | 41 | | 44 | | 43 | |
| $X^2$ | | 192.01 | | 321.64 | | 262.74 | |
| $X^2$/d.f | ≥2 | 4.68 | No | 7.31 | No | 6.11 | No |
| P | >0.05 | 0.00 | No | 0.00 | No | 0.00 | No |
| RMSEA | <0.06 | 0.14 | No | 0.22 | No | 0.17 | No |
| GFI | ≥0.9 | 0.83 | No | 0.70 | No | 0.66 | No |
| SRMR | <0.08 | 0.091 | No | 0.11 | No | 0.13 | No |
| CFI | ≥0.9 | 0.90 | Yes | 0.81 | No | 0.85 | No |
| NFI | ≥0.9 | 0.87 | Close | 0.79 | No | 0.83 | No |
| NNFI | ≥0.95 | 0.86 | No | 0.76 | No | 0.81 | No |

The Chi-square statistic of these three models was tested and the differences are given in Table 5-5 below. By investigating the model fit and Chi-square differences of alternative models, the statistics of model A look healthy (as per Table 5-4 above) and it was selected to modify for measuring the statistics.

Table 5-5: Chi-Square differences between models

| Model | Δ $X^2$ | Δ df |
|---|---|---|
| A-B | 129.63 | 3 |
| A-C | 70.73 | 2 |

#### 5.3.2.3 Modifying the model

Model A is the hypothesised model selected to modify further based on the better statistics in comparison to the other two alternative models. Two indices met the acceptability criteria and the model was further modified to get a good model fit. In the modification process, the model was modified by identifying weak item reliabilities, weak loadings for factors and residuals. All items stated in the modification indices were reviewed carefully and eliminated and/or re-specified taking one item at a time. The theoretical justification was also reviewed when re-specifying and setting error co-covariates between items. After removing one item and re-specifying two items, the model showed a very good fit as given in Table 5-6 below.

Table 5-6: Fit Indices of final measurement model

| Fit Indices | Criteria | Model A<br>Hypothesised model<br>(3 factors) | Acceptability |
|---|---|---|---|
| d.f. | | 32 | |
| $X^2$ | | 56.42 | |
| X2/d.f. | ≤2 | 1.76 | Yes |
| P | >0.05 | 0.15 | Yes |
| RMSEA | <0.06 | 0.069 | Yes |
| GFI | ≥0.9 | 0.93 | Yes |
| SRMR | <0.08 | 0.052 | Yes |
| CFI | ≥0.9 | 0.98 | Yes |
| NFI | ≥0.9 | 0.96 | Yes |
| NNFI | ≥0.95 | 0.98 | Yes |

#### 5.3.2.4 Assessing the reliability and validity

The composite reliability was assessed for all three BRAM attributes. As shown in Table 5-7 below, it was above 0.8, which is well above the accepted threshold of 0.6 advocated by Bagozzi and Yi's (1988) and Malhothra (2008). As discussed in the Methodology Chapter (Section 4.5.7.5), Average Variance Extracted (AVE) reported above 0.6 for all three BRAM attributes against the recommended threshold of 0.5 to suggest convergent validity (Fornell and Larcker 1981).

Table 5-7: Reliability and validity assessment

| Item | Parameter Estimate | Z value of parameter Estimate | Standardised Factor loading | Item reliability |
|---|---|---|---|---|
| Specificity - Composite reliability = 0.86<br>Average Variance = 0.62 | | | | |
| SPE1 | 1.00 | * | 0.93 | 0.87 |
| SPE2 | 0.86 | 12.83 | 0.81 | 0.66 |
| SPE6 | 0.73 | 8.95 | 0.64 | 0.41 |
| VIVI6 | 0.75 | 11.45 | 0.76 | 0.57 |
| Vividness - Composite reliability = 0.85<br>Average Variance = 0.76 | | | | |
| VIVI1 | 1.00 | * | 0.84 | 0.71 |
| AFF3 | 1.12 | 10.54 | 0.89 | 0.80 |
| Affect - Composite reliability = 0.0.86<br>Average Variance = 0.63 | | | | |
| AFF7 | 1.00 | * | 0.71 | 0.51 |
| VIVI8 | 1.06 | 9.47 | 0.81 | 0.65 |
| AFF8 | 1.37 | 10.52 | 0.93 | 0.87 |
| AFF10 | 0.85 | 8.03 | 0.68 | 0.47 |

**Fixed items do not have t-value*

#### 5.3.2.5 Assessing the discriminant validity

Discriminant validity was assessed by considering correlations by adding the standard error (both + and -) to investigate whether correlation is significantly different from 1. As shown in Table 5-8, all three constructs have discriminant validity.

Table 5-8: Discriminant validity of BRAM attributes

| Construct | | | |
|---|---|---|---|
| | Specificity | Affect | Vividness |
| Specificity | 1 | | |
| Affect | 0.49(0.05)<br>(0.59, 0.39) | 1 | |
| Vividness | 0.47 (0.09)<br>(0.65, 0.29) | 0.71 (0.06)<br>(0.83, 0.59) | 1 |

### 5.3.3 Scale validation: BRSM

Extant studies that investigate specific brand or product knowledge measured brand knowledge using two dimensions; brand awareness and brand image (Kim and Kim 2004; Keller 1993; Chen and He 2003) whereas this study examines the brand-experiences related to various brands in many product categories. Thus, five items were used to measure the brand knowledge in semantic memory, taking the product knowledge/familiarity scale by Smith and Park (1992), and Kent and Allen (1994), which has a reported Cronbach's Alpha above 0.80. These five items are listed in Table 5-9 (p. 215) together with kurtosis and skewness before the confirmatory factor analysis.

Table 5-9: Items, kurtosis and skewness of BRSM

| Label | Item | Kurtosis | Skewness |
|---|---|---|---|
| KNOW1 | I am well aware of this brand. | 0.11 | -1.44 |
| KNOW2 | This brand is not familiar to me. | -1.19 | -1.87 |
| KNOW3 | My knowledge about this brand is very strong. | -0.51 | -1.25 |
| KNOW4 | I have known about this brand for many years. | 0.25 | -1.04 |
| KNOW5 | I know what the brand image is. | 0.63 | -0.78 |

#### 5.3.3.1 Confirmatory Factor Analysis

Measure validation of the BRSM construct was conducted using Confirmatory Factory Analysis (CFA) with a different sample of 153. LISREL 8.80 was used to assess the reliability and validity of the measures. A confirmatory Factor Analysis model was specified for BRSM with each item loading onto BRSM. The results are shown in Table 5-10 below, which shows a very good fit, confirming the unidimensionality of the measurement scale.

Table 5-10: Fit indices of BRSM measurement model

| Fit Indices | Criteria | Fit Indices | Acceptability |
|---|---|---|---|
| d.f. | | 5 | |
| $X^2$ | X2/d.f. ≤2 | 8.59 | Yes |
| P | >0.05 | 0.30 | Yes |
| RMSEA | <0.06 | 0.066 | Yes |
| GFI | ≥0.9 | 0.98 | Yes |
| SRMR | <0.08 | 0.025 | Yes |
| CFI | ≥0.9 | 0.99 | Yes |
| NFI | ≥0.9 | 0.98 | Yes |
| NNFI | ≥0.95 | 0.99 | Yes |

5.3.3.2 Assessing reliability and validity

The composite reliability was assessed for BRSM items. The following Table 5-11 shows all the relevant statistics for reliability and convergent validity of BRSM attributes. The composite reliability was above 0.6, which is above the accepted threshold (Malhothra 2008; Bagozzi and Yi's 1988). As discussed in the Methodology Chapter (Section 4.5.7.5), Average Variance Extracted (AVE), reported above 0.5 for the BRSM construct (Fornell and Larcker 1981).

Table 5-11: Reliability and validity assessment – BRSM construct

| Item | Parameter Estimate | Z value of parameter Estimate | Standardised Factor loading | Item reliability |
|---|---|---|---|---|
| Composite reliability = 0.88<br>Average Variance = 0.61 | | | | |
| KNOW1 | 1.00 | * | 0.85 | 0.73 |
| KNOW2 | 0.59 | 7.37 | 0.57 | 0.32 |
| KNOW3 | 0.94 | 9.85 | 0.71 | 0.51 |
| KNOW4 | 0.99 | 12.74 | 0.85 | 0.72 |
| KNOW5 | 0.97 | 13.05 | 0.86 | 0.75 |

**Fixed items do not have t-value*

## 5.3.4 Scale validation: Self-Brand Congruence (SBC)

This section discusses the mediating variable of the model, SBC. The self-brand congruence scale (known as the global scale for self- brand congruence) was taken from Sirgy et al.(1997). This scale includes five items and has a reported Cronbach's Alpha of 0.90 (Please refer to the original wording of items given in the Appendix 4.12). Table 5-12 (p. 217) shows all five items and their normality test statistics (in terms of kurtosis and skewness).

Table 5-12: Items, Kurtosis and Skewness of SBC

| Label | Item | Kurtosis | Skewness |
|---|---|---|---|
| | This brand | | |
| SC1 | Is consistent with how I see myself. | -1.25 | -2.24 |
| SC2 | Reflects who I am. | 0.13 | -1.38 |
| SC3 | Is used by people similar to me. | -1.08 | -3.22 |
| SC4 | Is a typical brand used by people who are very much like me. | -0.92 | -1.36 |
| SC5 | Is a mirror image of me. | -2.89 | -1.58 |

#### 5.3.4.1 Confirmatory Factor Analysis

Confirmatory factor analysis model was specified with all five items in the scale. This variable had only one factor and therefore, specifying alternative models was not possible. A fit index of the initial model are given in Table 5-13 below.

Table 5-13: Fit indices of the initial model for SBC

| Fit Indices | Criteria | Initial Model | Acceptability |
|---|---|---|---|
| d.f. | | 5 | |
| $X^2$ | | 8.79 | |
| $X^2$/df | ≤ 2 | 1.76 | Yes |
| P | >0.05 | 0.32 | Yes |
| RMSEA | <0.06 | 0.065 | Yes |
| GFI | ≥0.9 | 0.98 | Yes |
| SRMR | <0.08 | 0.038 | Yes |
| CFI | ≥0.9 | 0.99 | Yes |
| NFI | ≥0.9 | 0.98 | Yes |
| NNFI | ≥0.95 | 0.98 | Yes |

Although the initial model indicates a good model fit, one item (SC3) was very weakly loaded at 0.15 and eliminated from further analysis. After modifying, model indices of the measurement model is given in Table 5-14 (p. 218).

Table 5-14: Model fit indices of SBC

| Fit Indices | Criteria | Measurement Model | Acceptability |
|---|---|---|---|
| d.f. | | 2 | |
| $X^2$ | | 2.49 | |
| $X^2$/df | ≤ 2 | 0.49 | Yes |
| P | >0.05 | 0.42 | Yes |
| RMSEA | <0.06 | 0.038 | Yes |
| GFI | ≥0.9 | 0.99 | Yes |
| SRMR | <0.08 | 0.011 | Yes |
| CFI | ≥0.9 | 1.00 | Yes |
| NFI | ≥0.9 | 0.99 | Yes |
| NNFI | ≥0.95 | 1.00 | Yes |

5.3.4.2 Assessing the reliability and convergent validity

Table 5-15 below shows composite reliability and the AVE for SBC and they are 0.73 and 0.69 respectively, which is well above the cut-off thresholds of 0.6 (Malhothra 2008; Bagozzi and Yi's 1988) and 0.5 (Fornell and Larcker 1981).

Table 5-15: Reliability and validity assessment of SBC

| Item | Parameter Estimate | Z value of parameter Estimate | Standardised Factor loading | Item reliability |
|---|---|---|---|---|
| Self-brand Congruence - Composite reliability = 0.73<br>Average Variance = 0.69 | | | | |
| SC1 | 1.00 | * | 0.93 | 0.87 |
| SC2 | 0.89 | 10.09 | 0.93 | 0.86 |
| SC4 | 0.80 | 14.74 | 0.83 | 0.68 |
| SC5 | 0.67 | 8.43 | 0.60 | 0.35 |

* *Fixed items do not have t-value*

### 5.3.5 Scale purification and validation: Affective Brand commitment (AFBC)

This section discusses the dependent variable of the proposed conceptual model; affective brand commitment. As discussed in Section 5.3.1 above, the affective brand commitment scale was purified and validated in the same manner using the existing scales on brand commitment by Evanschitzky et al. (2006), Coulter, Price and Feick (2003), Beatty and Kahle (1988) and Park and Kim (2003) with respective Cronbach alphas of 0.75, 0.92, 0.70 and 0.86. Please refer to the original wording of items of these scales in Appendix 4.12). In total nine items were considered in the purification stage and only five items were retained. Their statistics are shown in Table 5-16 below. Please refer to Appendix 5.2 for a complete report of the AFBC scale purification process.

Table 5-16: AFBC measure purification statistics

| Scale Item | | Factor Loading | Mean | Standard Deviation |
|---|---|---|---|---|
| BBC1 | I consider myself to be highly loyal to this brand. | .621 | 3.2533 | 1.10634 |
| BBC3 | I stick with this brand because I know it is the best for me. | .839 | 3.1867 | 1.20060 |
| AFFBC2 | I feel emotionally attached to the brand. | .859 | 3.1867 | 1.18936 |
| AFFBC3 | Over the years, I have bought the same brand. | .902 | 3.1200 | 1.16964 |
| AFFBC4 | I am committed to this brand. | .793 | 3.2013 | 1.18538 |
| Cronbach's Alpha | | | | 0.865 |
| Total variance explained | | | | 65.384% |
| KMO | | | | 0.844 |
| Bartlett's Test of Sphericity | | | | 369.439 df 21 p=.000 |

#### 5.3.5.1 Confirmatory Factor Analysis

Confirmatory factor analysis model was specified with all five items in the scale after testing the normality test statistics (in terms of kurtosis and skewness) shown in Table 5-17. This variable had only one factor and therefore, specifying alternative models was not possible. A fit index of the initial model is given in Table 5-18 below.

Table 5-17: Items, kurtosis and skewness of AFBC

| Label | Item | Kurtosis | Skewness |
|---|---|---|---|
| BBC1 | I am loyal to the brand | -0.53 | -0.39 |
| BBC3 | I stick with the brand | -0.24 | -1.29 |
| AFFBC2 | I am emotionally attached to the brand | -0.18 | -1.15 |
| AFFBC3 | I am committed to the brand | -0.67 | -1.60 |
| AFFBC4 | I bought the same brand overtime | -0.24 | -1.30 |

Table 5-18: Fit indices of the initial model for AFBC

| Fit Indices | Criteria | Initial Model | Acceptability |
|---|---|---|---|
| d.f. | | 5 | |
| $X^2$ | | 5.13 | |
| $X^2$/df | ≤ 2 | 1.02 | Yes |
| P | >0.05 | 0.61 | Yes |
| RMSEA | <0.06 | 0.00 | Yes |
| GFI | ≥0.9 | 0.99 | Yes |
| SRMR | <0.08 | 0.022 | Yes |
| CFI | ≥0.9 | 1.00 | Yes |
| NFI | ≥0.9 | 0.99 | Yes |
| NNFI | ≥0.95 | 1.00 | Yes |

Although the initial model indicates a good model fit, one item (BBC1) was very weakly loaded and therefore eliminated from further analysis. After modifying, the model indices of the measurement model are given in Table 5-19 below.

Table 5-19: Fit indices of AFBC measurement model

| Fit Indices | Criteria | Measurement Model | Acceptability |
|---|---|---|---|
| d.f. | | 2 | |
| $X^2$ | | 2.05 | Yes |
| $X^2$/df | ≤ 2 | 1.02 | Yes |
| P | >0.05 | 0.48 | Yes |
| RMSEA | <0.06 | 0.014 | Yes |
| GFI | ≥0.9 | 0.99 | Yes |
| SRMR | <0.08 | 0.011 | Yes |
| CFI | ≥0.9 | 1.00 | Yes |
| NFI | ≥0.9 | 1.00 | Yes |
| NNFI | ≥0.95 | 1.00 | Yes |

5.3.5.2 Assessing the reliability and convergent validity

Table 5-20 (p. 222) shows composite reliability and the Average Variance Extracted for AFBC, and they are 0.91 and 0.74 respectively which is well above the cut-off thresholds of 0.6 (Malhothra 2008; Bagozzi and Yi's 1988) and 0.5 (Fornell and Larcker 1981).

Table 5-20: Reliability and validity assessment of AFBC

| Item | Parameter Estimate | Z value of parameter Estimate | Standardised Factor loading | Item reliability |
|---|---|---|---|---|
| Brand Commitment - Composite reliability = 0.91<br>Average Variance = 0.74 | | | | |
| BBC1 | 1.00 | * | 0.96 | 0.91 |
| AFFBC2 | 0.93 | 21.34 | 0.92 | 0.84 |
| AFFBC3 | 0.65 | 9.45 | 0.63 | 0.40 |
| AFFBC4 | 0.94 | 19.90 | 0.90 | 0.81 |

**Fixed items do not have t-value*

## 5.4 Summary

This chapter discussed the reliability and validity considerations of the three empirical studies. In qualitative interviews, trustworthiness measures were followed in the design, conduct and analysis of qualitative interviews. In the fMRI experiment, all individual brain- images were pre-processed following the standard procedure (i.e. slice timing correction, realignment, co registration, spatial normalisation and smoothing). Survey data were measured for reliability and validity through EFA and CFA. The Table 5-21(p. 223) summarises important statistics against each measure involved in the measurement model derived from survey data.

Table 5-21: Summary statistics of the measurement scales

| Construct | No of Items | Composite Reliability | Average Variance Extracted |
|---|---|---|---|
| **Exogenous variables** | | | |
| *BRAM Attributes* | | | |
| Specificity | 4 | 0.86 | 0.62 |
| Vividness | 2 | 0.85 | 0.76 |
| Affect | 4 | 0.86 | 0.63 |
| **Endogenous variables** | | | |
| BRSM | 5 | 0.88 | 0.61 |
| Self-Brand Congruence | 4 | 0.73 | 0.69 |
| Affective Commitment | 4 | 0.91 | 0.74 |

# Chapter 6 : RESULTS

## 6.0 Introduction

Chapter 5 detailed the reliability and validity measures followed in the three main empirical studies: qualitative interviews, fMRI experiments and the survey. In testing relevant propositions and hypotheses developed in Chapter 3, this chapter details the results of these three main studies and tests relevant propositions and hypotheses developed in Chapter 3. This Chapter 6 is structured around different propositions and hypotheses as depicted in the following Table 6-1.

Table 6-1: Propositions and hypotheses measured by empirical studies

| **Propositions - (Sections 6.1 - 6.4)** | | Qualitative Interviews | fMRI Interviews | Survey |
|---|---|---|---|---|
| P1 | Brand-related memories will be predominantly represented in either AM or SM. (Section 6.1) | √ | √ | |
| P2 | Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM. (Section 6.2) | | √ | |
| P3 | Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM. (Section 6.3) | | √ | |
| P4 | Specificity, vividness and affect are reflective of BRAM. (Section 6.4) | √ | | √ |

| **Hypotheses - (Section 6.5)** | | | | |
|---|---|---|---|---|
| Hypotheses testing procedure - (Section 6.5.1) | | | | |
| H1 | BRAM positively affects BRSM. (Section 6.5.2) | | | √ |
| H2 | Variance in self-brand congruence is explained more by BRAM than BRSM. (Section 6.5.3) | | | √ |
| H3a<br>H3b | BRAM positively affects brand commitment.<br>Variance in affective brand commitment is explained more by BRAM than BRSM. (Section 6.5.4) | √<br>√ | √<br>√ | √<br>√ |
| H4 | Self-brand congruence positively influences affective brand commitment. (Section 6.5.5) | | | √ |

Importantly as per Table 6-1 above, relevant propositions and hypotheses were measured by methodological triangulation to achieve a higher degree of validity and reliability of the findings.

## 6.1 Proposition 1: Brand-related memories will be predominantly represented in either AM or SM

As shown in the above Table 6-1, proposition 1 was investigated through qualitative interview data and fMRI experiment data. The following two Sections 6.1.1 and 6.1.2 discuss the results in detail.

### 6.1.1 Interview results

The classification of predominant brand memory retrieval either in AM and/or SM was based on the expressed content when informants recalled their brand memories. A recall of abstract knowledge about brand-related memories was treated as SM associated memories while detailed episodic brand memories were

treated as AM associated memories. In total, informants recalled 107 brand-associated memories. These memory narratives were examined using the SM and AM classification (Mantonakis et al. 2008; Ryan et al. 2008) where abstract brand memory statements were considered as SM-associated brand memories while episodic or detailed memory narratives were considered as AM-associated brand memories. Table 6-2 below illustrates a selective list of brands associated with SM because informants did not necessarily relate these brands to any of their personal significant events, but gave a description of brands and some occasions of use. The extensive list of 61 SM-associated brands is provided in the Appendix 6.1. In contrast, Table 6-3 (p. 228) in depicts a selective list of BRAM in different life transition periods (Please refer to the Appendix 6.2 for the complete list of BRAM). By observing these narratives, it is clear that brand memories are expressed predominantly in either SM or AM.

Table 6-2: Existence of brand memories in SM

| | Brand | Memory Description |
|---|---|---|
| Automobiles | | |
| | Audi | It is the reliability of German made cars, you know, it is more robust and prestigious. |
| | BMW | The shape, the way it drives, the comfort, everything was nice. |
| | Fiat | Mainly the affordability, compared to other cars. |
| Clothes | | |
| | Dorothy Perkins | Designs are nice and comfortable. |
| | Levis Jeans | It is more expensive to buy, but I'd rather pay for them to look nice and better. |
| | Adidas | Better quality. |
| | Nike | A cool brand and prestigious.<br>These are the best brands endorsed by best players.<br>Very comfortable. |

| Personal Care | | |
|---|---|---|
| | Gillette | Long lasting. |
| | Johnson and Johnson | Very mild and does not cause skin allergy. |
| | Dove | It is very mild. |
| | Garnier | I feel the softness of my hair after using. |
| | Colgate | Colgate, it is re-assurance. |
| Other | | |
| | O2 | Price and quality is quite good on O2. |
| | Sony | Sony is Japanese and their technology is very advanced. |
| | Lucozade | Good to boost up energy level when I was ill. |

Findings suggest that brands can be represented in both AM and SM. Brand memories stored in AM were expressed with episodic details whereas brand memories stored in SM were expressed in abstract product information expressing brand knowledge, supporting proposition 1 above.

Table 6-3: Existence of brand memories in AM

| **BRAM** | | **Brand** | **Quotes** |
|---|---|---|---|
| Life time events | | | |
| 1 | Spending time with an uncle who has musical instruments | Panasonic | "I happened to have an uncle that I spent a lot of time with, when I passed secondary school and happened to go to the university, he had these musical instruments. They produced good sounds that I enjoyed. I was tempted by that. The first musical instrument I bought was Panasonic and so if I want to go buying a musical instrument, I always go for Panasonic." |
| 2 | Playing football with friends | Nike | "I remember Nike; I think there is something cool in Nike when you are a child. That it is a prestigious brand." |
| General Events | | | |
| 3 | Lunch time at school | Heinz | "My mum always bought Heinz baked beans. Obviously, I tried different brands in different places, the taste wasn't there, you know I could tell straight away that it is not the usual one I have." |
| 4 | Having the same brand as the family car | Mercedes | "I was a lot into Mercedes. At that time, Mercedes cars were actually pretty much in our family, my uncle did, my dad did and my granddad did. I actually loved it so much. At that time, in 1998, they were the best cars, first class cars. The technology they had at that time was amazing; I mean they have improved it now. Really good cars." |
| Specific events | | | |
| 5 | Trip to London on Saturdays | Waterstones | "Our trip every month. My dad used to take us to the Centre of London. It is an exciting trip to get on the tube, go to Central London, and go to Waterstone's. We used to go on a Saturday. We loved Ladybird stuff, books from Waterstones. I always go to Waterstones and definitely will continue. I think it is an emotional attachment." |
| 6 | Skin irritation while on a holiday | Body shop | "The Body Shop is the brand that I buy all my makeup, purely because it's all high quality and organic and I've got sensitive skin as well. Again, one year, when I was on holiday, my skin flamed, they've got a Body Shop at Gatwick airport and my mum bought me a nice foundation from there and it never affected my skin." |

### 6.1.2 FMRI experiment

The final neuroimaging results are summarised and shown below in Table 6.4. These results are used in investigating propositions 1, 2 and 3, and support hypotheses 3a and 3b. Table 6-4 summarises regional brain activation data associated with the four main conditions, i.e. the four brand memory types vs. the rest (baseline) condition (within-memory type) contrasts. In these results, statistical probability values are uncorrected, but are at a more conservative $p<.001$ threshold (vs. the typical $p<.05$). A spatial contiguity threshold of 20 active voxels (Forman et al. 1995) was also employed to help attenuate false positives further. Coordinates are summarized in the standard stereotactic space defined by the Talairach and Tournoux (1988) atlas.

Table 6-4: Regional brain activity during the unprompted AM (uBRAM), prompted AM (pBRAM), SM conditions (BRSM) and no memory conditions (NOME) - ('within brand-related memory type' contrasts).

| **Brain region** | **Brodmann's Area** | **Hemisphere** | **Z-score** | **Talairach coordinates** |
|---|---|---|---|---|
| **UBRAM** | | | | |
| Thalamus | | Left | 5.08 | -20 -22 12 |
| Precuneus | 7 | Left | 4.79 | -2 -66 34 |
| ParaCentral Lobule | 5 | Left | 4.71 | -15 -16 45 |
| Inferior Frontal Gyrus (ventrolateral prefrontal cortex) | 44 | Left | 4.47 | -43 3 19 |
| (Anterior) Cingulate Gyrus | 32 | Midline | 4.03 | 0 38 12 |
| (Mid) Cingulate Gyrus | 32 | Right | 4 | 23 26 32 |
| Thalamus | | Right | 3.85 | 11 -9 1 |
| Precuneus | 19 | Left | 3.68 | -27 -55 47 |

| | | | | |
|---|---|---|---|---|
| **PBRAM** | | | | |
| (Retrosplenial) Cingulate Cortex | 29 | Left | 4.64 | -8 -40 7 |
| Inferior Frontal Gyrus (ventrolateral prefrontal cortex) | 45 | Left | 4.39 | -29 23 19 |
| Superior Temporal Gyrus | 21 | Left | 4.17 | -51 -15 0 |
| Inferior Frontal Gyrus | 45 | Left | 4.49 | -29 15 19 |
| Middle Frontal Gyrus (dorsolateral prefrontal cortex) | 9 | Right | 4.36 | 27 9 38 |
| Precentral Gyrus | 6 | Right | 4.09 | 40 -2 12 |
| (Mid) Cingulate Gyrus | 24 | Right | 3.86 | 3 -6 32 |
| Inferior Parietal Lobule | 40 | Right | 3.57 | 33 -40 35 |
| Postcentral Gyrus | 2 | Right | 3.35 | 41 -20 30 |
| **BRSM** | | | | |
| Precuneus | 7 | Left | 5.23 | -9 -66 34 |
| (Retrosplenial) Cingulate Cortex | 30 | Right | 5.22 | 9 -39 15 |
| Thalamus | | Left | 4.99 | -11 -17 7 |
| (Anterior/Mid) Cingulate Gyrus | 32 | Right | 4.62 | 20 29 29 |
| (Mid) Cingulate Gyrus | 24 | Left | 4.51 | -23 8 34 |
| Medial Frontal Gyrus | 6 | Right | 3.98 | 18 -6 53 |
| **NOME** | | | | |
| Middle Frontal Gyrus (dorsolateral prefrontal cortex) | 9 | Left | 5.08 | -26 9 37 |
| (Anterior) Cingulate Gyrus | 33 | Left | 4.11 | -23 16 21 |
| Lateral Sulcus | | Left | 4.1 | -23 -10 22 |
| Superior Temporal Gyrus | 21 | Left | 4.82 | -45 -15 0 |
| Cuneus | 19 | Left | 4.44 | -6 -66 32 |
| Middle Frontal Gyrus | 6 | Right | 4.23 | 23 -6 55 |
| Precuneus | 7 | Right | 4.19 | 30 -43 32 |
| (Anterior/Mid) | 32 | Right | 4.12 | 20 29 27 |

| | | | | |
|---|---|---|---|---|
| Cingulate Gyrus (Lateral) Globus Pallidus (basal ganglia) | | Left | 3.96 | -15 0 -1 |
| Thalamus | | Right | 3.73 | 8 -11 1 |
| (Posterior) Cingulate Gyrus = visuospatial | 23 | Midline | 3.39 | 0 -53 15 |

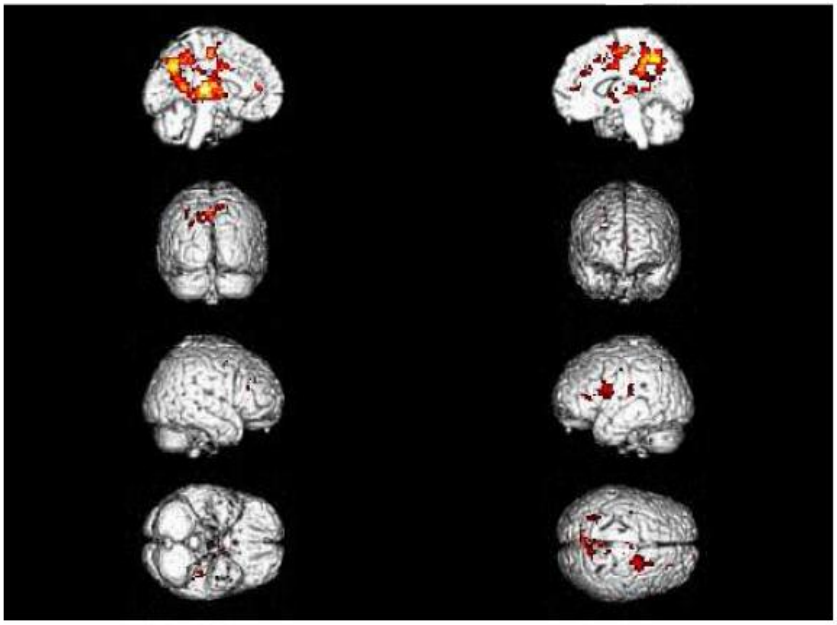
*All areas were significant to p<0.001 uncorrected. L=left, R=right, M=midline.*

*Coordinates are given for the stereotactic space of the Talairach Atlas.*

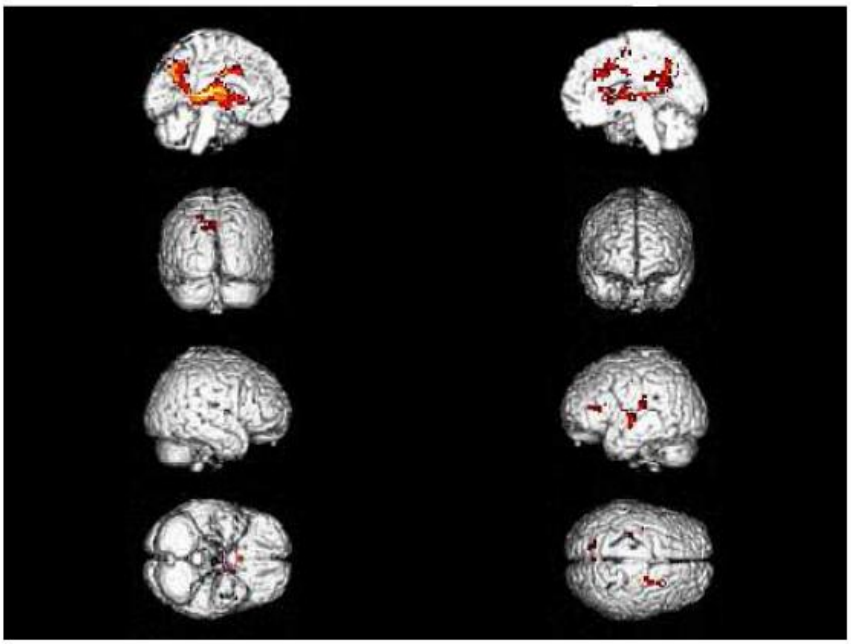
Rendered 3-dimensional brains depicting BOLD response patterns from the 'within brand-related memory type' contrasts are shown in Figure 6-1. The four memory conditions in Figure 6 are 1; a. Unprompted AM (vs. rest) - uBRAM; b. Prompted AM (vs. rest) - pBRAM; c. Semantic memory (vs. rest)- BRSM and, d. No memory (vs. rest) - NOME activations are presented. The colours indicate the intensity of activity in that brain region, going from white indicating least intense, through yellow, then orange, to red indicating most intense.

Figure 6-1: Brand memory activation in human brain in four memory conditions (Top-left = view from the front of the brain; top-right = view from the front; mid-left = view from the right hand side; mid-right = view from left; bottom-left = view from underneath; bottom-right = view from above).

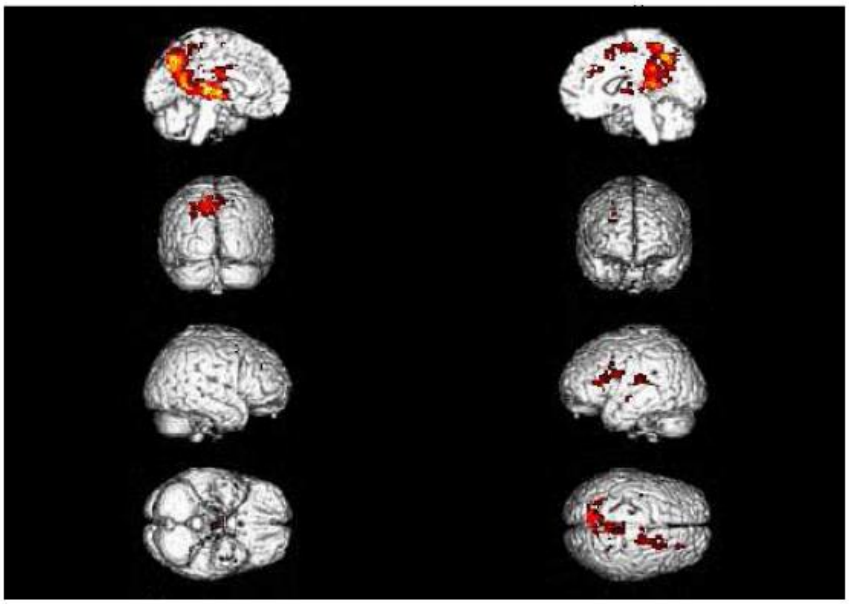
a. Unprompted BRAM (vs. rest)



b. Prompted BRAM (vs. rest)



c. BRSM(vs. rest)



d. No memory (vs. rest)

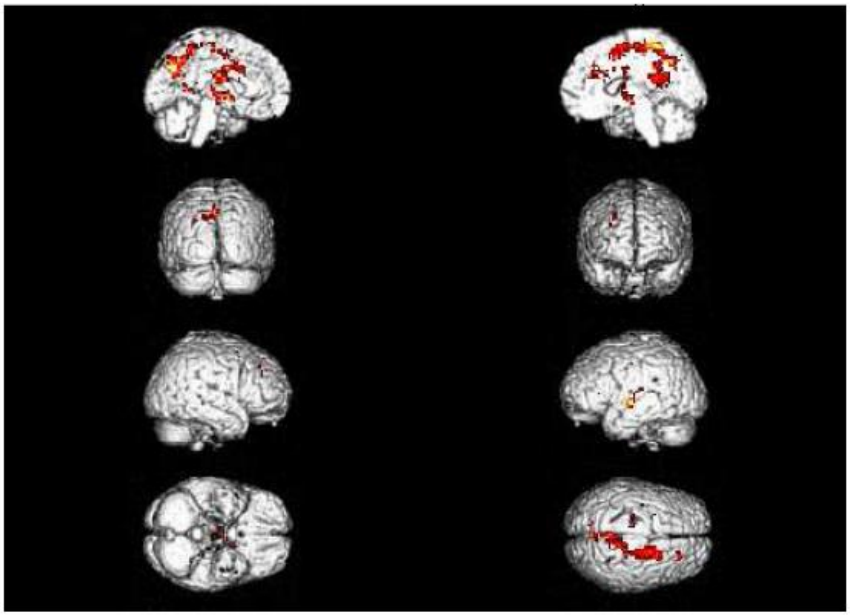


Figure 6-1 demonstrates activation of brain areas in all four conditions (uBRAM, pBRAM, BRSM and NOME) and the most intense activation can be seen in the uBRAM condition compared to the pBRAM condition. BRAM activation is evidenced in the areas thalamus, precuneus, inferior frontal gyrus (ventrolateral

prefrontal cortex), cingulate gyrus, inferior frontal gyrus, cingulate cortex and middle frontal gyrus (dorsolateral prefrontal cortex) while BRSM activations can be seen in the precuneus, cingulate cortex, and medial frontal gyrus.

Although BRSM activation is seen in the relevant SM areas, it is not as intense as in BRAM, and the control condition with no or little brand memory (i.e. NOME) depicts weak activation in AM-SM associated brain regions in comparison to BRAM and BRSM conditions. Thus, we can arrive at the conclusion that, when brands are AM-related, relevant brain regions are activated intensively in comparison to when brands are associated with SM. Although there are large overlaps in the different networks, BRAM and BRSM can be distinguished neuroanatomically.

As per Table 6-4, both uBRAM and pBRAM conditions were associated with activation of ventrolateral prefrontal cortex, middle frontal gyrus (dorsolateral prefrontal cortex and cingulate cortex areas that are consistent with the previous studies of AM activation (Burianova and Grady 2007; Steinvorth, Corkin and Halgren 2006; Maddock, Garrett and Buonocore 2001; Fink et al. 1996). Activity in the inferior frontal gyrus, middle frontal gyrus, and the thalamus was observed during BRSMs; these results resemble Burianova and Grady's (2007) investigation of common and unique neural activations in autobiographical and semantic retrieval where the medial frontal gyrus is essentially related to BRSM. Although common regions of activation across BRAM and BRSM were examined, as Manns, Hopkins and Squire (2003) posited that hippocampus and medial temporal lobe activation relates to both AM and SM, these direct comparisons revealed that all uBRAM, pBRAM and BRSM share inferior frontal gyrus, middle

frontal gyrus, and the thalamus. Although uBRAM and pBRAM show similar activations, BRSM is different in activating the medial frontal gyrus. Taken together these results suggest that brand memories are represented separately in AM and SM, supporting the proposition 1.

## 6.2 Proposition 2: Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM.

Self-relevance activation neural regions have been identified by seminal neuroimaging studies (Gillihn and Farah 2005; Heatherton et al. 2006; D'Argembeau et al. 2007). As detailed in Table 6-4, when BRAM are recalled, self-relevant areas such as ventrolateral prefrontal (lateral orbiotfrontal) cortex and dorsolateral prefrontal cortex are activated in comparison to BRSM as an integral element of AM activation (i.e. uBRAM and pBRAM). As images a and b in Figure 6.1 demonstrate, when AM regions are activated, the self-construal areas are activated in BRAM conditions but not in BRSM condition, supporting proposition 2 above.

## 6.3 Proposition 3: Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM.

As discussed in Chapter 3 (Section 3.1.3), extant neuroimaging studies have discovered the activation areas of human brain in light of emotions and feelings; regions of the limbic cortex and ventromedial prefrontal area (Fink et al. 1996; Markowitsch 1998; Markowitsch et al. 2003) medial frontal gyrus, posterior cingulate gyrus and angular gyrus (Greene et al 2001; Maddock 1999). As BRAM are affect-laden, it was expected to activate these areas in the subject's brain upon recalling BRAM in comparison to BRSM. As per Table 4-6 above,

ventromedial prefrontal area activation on both unprompted BRAM and prompted BRAM recall was evidenced, but not in BRSM, supporting the proposition that emotion activation is an integral aspect of AM.

## 6.4 Proposition 4: Specificity, Vividness and Affect are reflective of BRAM.

Proposition 4 was examined through interview results and the survey findings by specifying and evaluating a second order factor model. Results related to this hypothesis are discussed in detail in the following sections.

### 6.4.1 Interview results

The second area explored by the qualitative interview was the dimensionality of BRAM, in other words, the way in which BRAM are stored in consumers' minds. As discussed in Chapter 3, BRAM can be expressed in terms of contextual information (Specificity), perceptual information (Vividness) and Affect. The following sections discuss the findings related to these three dimensionalities.

#### 6.4.1.1 Specificity of BRAM

Although twenty-eight memories were rich in contextual information (or Specificity), two of them were negative memories and eliminated from further analysis. These BRAM narratives were condensed in terms of what happened, when, where and who were involved, as suggested by the work of Williams, Healy and Ellis (1999) and Kopelman, Wilson and Baddeley (1989). Degree of Specificity was determined high when BRAM fulfilled all four criteria given above, medium when three criteria were fulfilled and low when only two were fulfilled (Levine et al. 2002; Anderson and Conway 1993).

The condensed analysis is shown in the Table 6-5 (p. 239) for high specific memories. Exemplary BRAM quotation 1 shown below is found to be high in Specificity whereas quotation 2 is low in Specificity, from which the analyses is derived. When respondents recollected the brand-related memory relating to their significant personal memories, this contextual information was stored and recalled in AM. Thirteen such BRAM events were discovered with high specificity, eleven events with moderate specificity and four events with low specificity (Please refer to the Appendix 6.3 for the quotations of all high, medium and low BRAM). These findings suggest that Specificity or contextual information is stored in AM.

BRAM 1

*"Once an advert had a really funny effect on me. You know I was in Africa, went for a conference, I was driving to the hotel from the airport. There was a big billboard, 'Samsung, Crystal Clear'. This had a very good effect on me. It was presented in sky blue, Crystal. It was very simple. When I checked into the hotel and the TV in my hotel room was Samsung, The pictures were coming very bright and nice."*

BRAM 2

*"We went on a holiday to America when I was 11 years old, and lots of brands like Nike and stuff were a lot cheaper. I remember buying Nike trainers and t-shirts from America."*

#### 6.4.1.2 Vividness of BRAM

According to Cui et al. (2007), Vividness is the mental visualization or the ability to imagine personal experiences. Hence, vividness was determined by asking participants whether they could imagine the experience through sensory forms. BRAM experiences were found to be vivid based on participants' ability to visualise their BRAM upon recall. Although the degree of vividness varied between BRAM, this was not taken into consideration in the analysis, as the primary objective was to examine whether BRAM expresses vividness. However, it should be noted that the varying Vividness can be explained by the ability to imagine and/or information processing ability of each individual (Blajenkova, Kozhevnikov and Motes 2006; Childers, Houston, and Heckler 1985; Richardson 1977). Table 6-6 (p. 241) below shows participants' expressions on vividness when recollecting BRAM episodes (Please refer to the Appendix 6.4 for all narratives related to the Vividness) and these narratives' support towards the dimensionality of Vividness in BRAM.

Table 6-5: High Specificity of BRAM

| **BRAM** | | **Brand** | **What happened** | **When** | **Where** | **Who** | **Degree of Specificity** |
|---|---|---|---|---|---|---|---|
| 1. | Trip to London on Saturdays | Waterstones | -Trip every month on the tube<br>-On Saturdays<br>-Get books (Maths, Science or English) for homework | Age of five | Central London | Dad<br>With elder brother | High |
| 2. | Holiday in America | Nike | -Shops sold many brands like Nike<br>-Bought Nike trainers<br>-Buying trainers and t-shirts | Young<br>10 years | America | Family | High |
| 3. | Winning the Rugby world cup | Addidas | -Played in Australia<br>-An England won<br>-Watched on the TV<br>-Joni Wilkinson had Addidas boots<br>-He was the main player | 2003 | -Home<br>-In the living Room | -Dad<br>-My Friend and his father | High |
| 4. | Playing with friends | Rimmel | -Acting in some play or pretending to be models or in a photographic shoot. | 14 years | At home | Myself, sister and best friends | High |
| 5. | Seeing mum making a drink for sister | Nestle | -Mum was making a drink<br>-Tasted it with a spoon<br>-Drank all | 8 years<br>After school | At home | Mum<br>Little sister | High |
| 6. | B'day gift from Dad for 18th B'day | Designer bag | Came through the post<br>In the morning | 18 years<br>In college | To home | Dad, Postman and Family | High |
| 7. | Spending time with an uncle who has musical instruments | Panasonic | -Instruments produced good sounds<br>-We enjoyed | Going to the University | Africa | Uncle | High |
| 8. | Playing football with friends | Nike | Playing football | From 5 – 17 yrs | Field near house | Friends | High |
| 9. | Brushing teeth and seeking for the ring of confidence | Colgate | -Cleaning teeth<br>-Trying to find the ring<br>-Got caught by sister | 5 years | Bathroom | Sister | High |
| 10. | Neglecting dad's advice | Lucozade | -Dad's instructions not to open<br>-Ignored and opened it<br>-Spilt all over | 5 years | House | Dad<br>Everyone's clothes | High |
| 11. | Dinning with family | Fray Bentos | -Mum makes sandwiches<br>-Every Sunday for tea | Child | Home<br>5'o'clock | Five members in the family | High |
| 12. | Costume day in school | Superman | one of the best events -special day. | 8 years | School | Friends, Family | High |

Table 6-6: Vividness of BRAM

| **BRAM** | | **Brand** | **Quote** |
|---|---|---|---|
| 1. | Waterstone's Saturday in London | Waterstones | It used to be four of us, my parents, myself and my elder brother. We used to have a packed lunch for the day and definitely it involved Waterstones. Every month we used to sit, it was me and my elder brother because my younger brother wasn't born then, we'd sit with the calendar, and decide which Saturday we would be going to Waterstones. |
| 2. | Winning the Rugby world cup | Addidas | It was early in the morning. I had to get up at half nine, it was in Australia. We had some champagne actually. I can even imagine having some bacon sandwiches as well. |
| 3. | Playing with friends | Rimmel | I can imagine sort of trying out make up, myself, my sister and my best friends. We used to play and all the time we used make up, when we were in acting some play or pretending to be models or in a photographic shoot. |
| 4. | Seeing mum making a drink to sister | Nestle | My mum was making a little sister a drink, the hot drink for her in her baby bottle, and I was like, oh, let me taste that, how does that taste? Obviously, it is different from what she gives us. I tasted the raw one without putting it into the milk and water. Oh my god, it was very tasty, and then I made a whole jug and drank it. |
| 5. | Lunch time at school | Heinz | I can picture everything. There was a corner shop just down the road. There were really nice jacket potatoes and we used have it outside. |

#### 6.4.1.3 Affect of BRAM

The content of BRAM narratives was analysed for feelings, emotions and moods. A variety of feelings and emotions were associated with BRAM events and twenty BRAMs were explored with an associated affect. Except one type of feeling (frustration) associated with a negative BRAM, all other BRAM were associated with positive feelings and emotions. Common types of affect associated with BRAM were, 'happy', 'good', 'love' and 'nice'. Table 6-7 presents selected quotations by respondents who expressed affect in BRAM (Please refer to the Appendix 6.5 for all narratives related to affect).

Table 6-7: Affect of BRAM

| Brand | Quote |
|---|---|
| Waterstones | "We **loved** Ladybird stuff and books from Waterstones. I have an emotional attachment with the shop because it reminds me of my lovely childhood days." |
| Samsung | "The pictures were coming very bright and **nice**. Can I say these brands have a spiritual effect or an emotional affect?" |
| Nike | "I felt **happy** actually because, it was one of my first presents from her. It was a happy moment." |
| Mercedes | "I actually **loved** it so much. It was a very good car. It was a precious feeling and that was amazing, I absolutely loved it." |

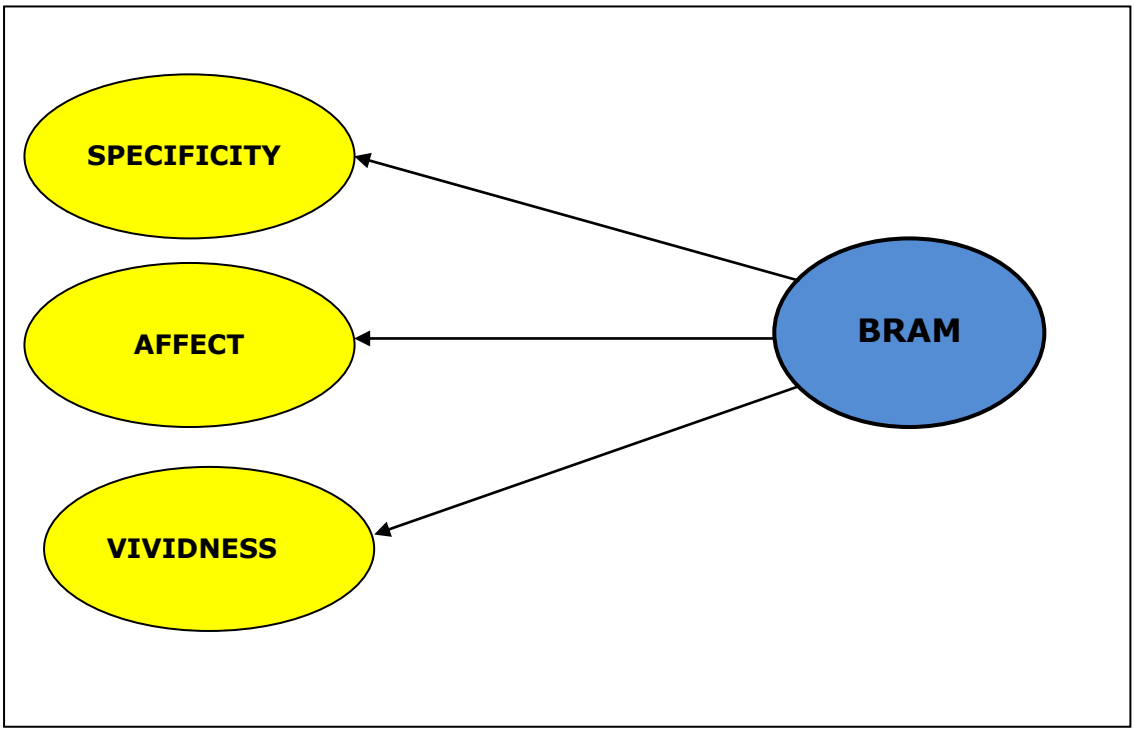
From the above discussion and the findings shown in Tables 6-5, 6-6 and 6-7, it is fair to judge that brand memories stored in AM are rich with Specificity, Affect and Vividness, supporting proposition 4.

### 6.4.2 Survey results

A higher-order approach to BRAM was taken in investigating the above proposition 4 and this section details the development of a higher-order model for BRAM attributes, investigation of factor relationships, reliability and validity assessments.

As discussed in Chapter 3, three factors were identified in manifesting brand-related autobiographical memories (BRAM): Specificity, Vividness and Affect. In a high- order structure model, relationship between factors is explained through the higher–order constructs. The importance of a higher-order structure is its parsimony in explaining the relationships between variables. The higher-order structure proposed in this study is reproduced in Figure 6-2 below.

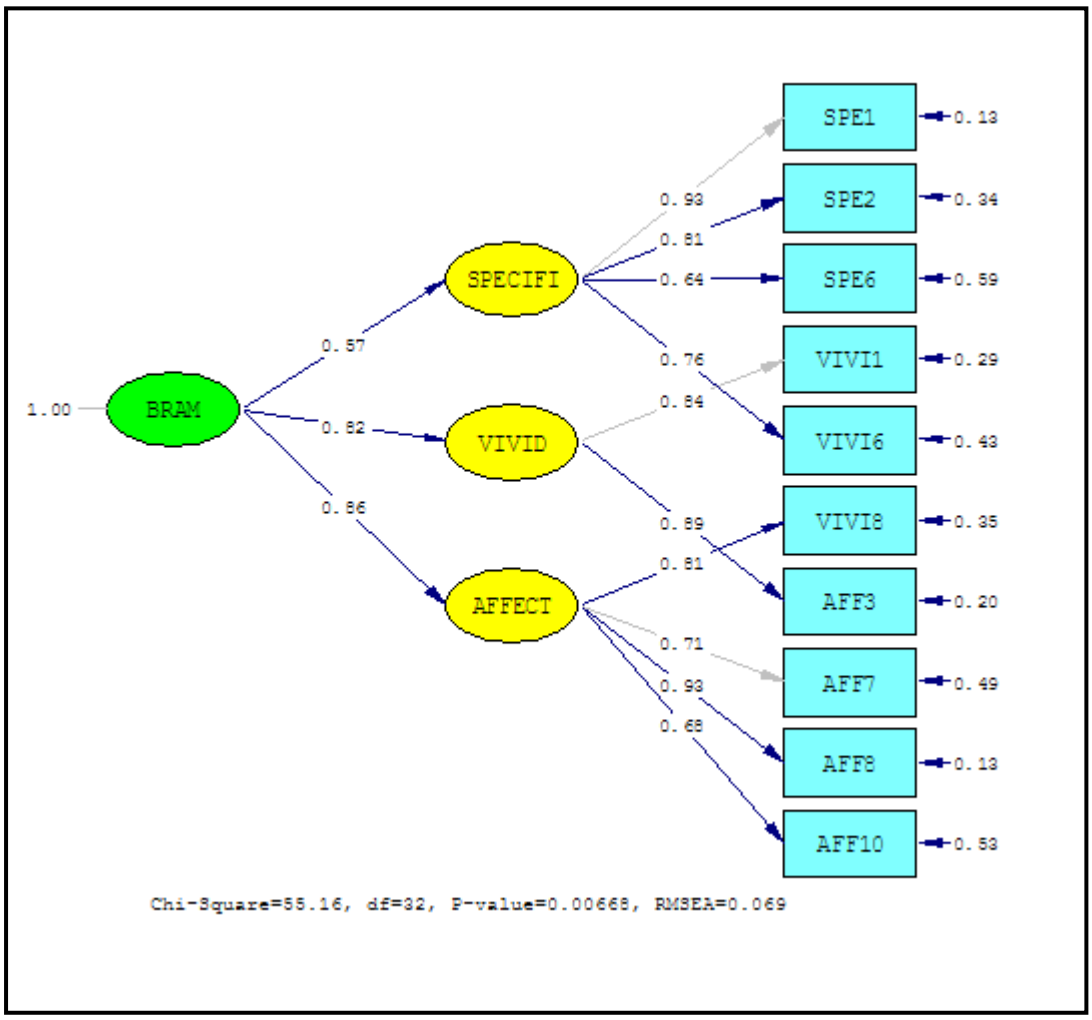
Figure 6-2: Higher order structure of BRAM



6.4.2.1 Assessing a higher-order model for BRAM attributes

A higher-order model was developed with three dimensions that contribute to the BRAM construct against the three-factor model confirmed in the confirmatory factor analysis. Due to the number of factors (three factors), it was not possible to test alternative models and therefore initially the model fit of the second-order model was investigated directly rather than making a comparison between alternative models. Figure 6-3 shows a healthy relationship between first and second order factors.

Figure 6-3: Second-order factor model for BRAM attributes



As per the fit indices of the second-order model shown in the Table 6-8 below, a very good fit was evidenced through the relevant fit indices. A strong loading on the second factor is shown by 0.86 for Affect, 0.82 for Vividness and 0.57 for Specificity. The respective t-values were 7.37, 7.72 and 6.35 respectively, and they are all above 1.96.

Table 6-8: BRAM attributes - Fit indices of the second-order factor model

| Fit Indices | Criteria | Second-Order Model | Acceptability |
|---|---|---|---|
| d.f. | | 32 | |
| $X^2$ | | 56.42 | |
| $X^2$/df | ≤2 | 1.76 | Yes |
| P | >0.05 | 0.15 | Yes |
| RMSEA | <0.06 | 0.069 | Yes |
| GFI | ≥0.9 | 0.93 | Yes |
| SRMR | <0.08 | 0.056 | Yes |
| CFI | ≥0.9 | 0.98 | Yes |
| NFI | ≥0.9 | 0.96 | Yes |
| NNFI | ≥0.95 | 0.98 | Yes |

#### 6.4.2.2 Reliability assessment

As discussed in Chapter 4 (Section 4.5.8.5), the reliability of the second-order model for BRAM was assessed through the following equation. The composite reliability of BRAM was 0.80 which is well above the threshold of 0.6 (Bagozzi and Yi 1988).

$$CR = \frac{(\Sigma \text{ standardised loadings of 1st-order on 2 nd-construct})^2}{(\Sigma \text{ standardised loadings of 1st-order on 2 nd-order construct})^2 + (\Sigma \text{ 1 st order construct error variance})}$$

6.4.2.3 Convergent validity

The convergent validity was determined by assessing the factor significance on the second order construct. Respective t-values were 6.35 for specificity, 7.72 for vividness and 7.37 for affect showing a convergent validity. The Average Variance Extracted was calculated using the following equation as discussed in Chapter 4 (Section 4.5.8.6), and reported 0.58 which is above the cut-off point of 0.5 (Fornell and Larcker 1981) confirming the convergent validity.

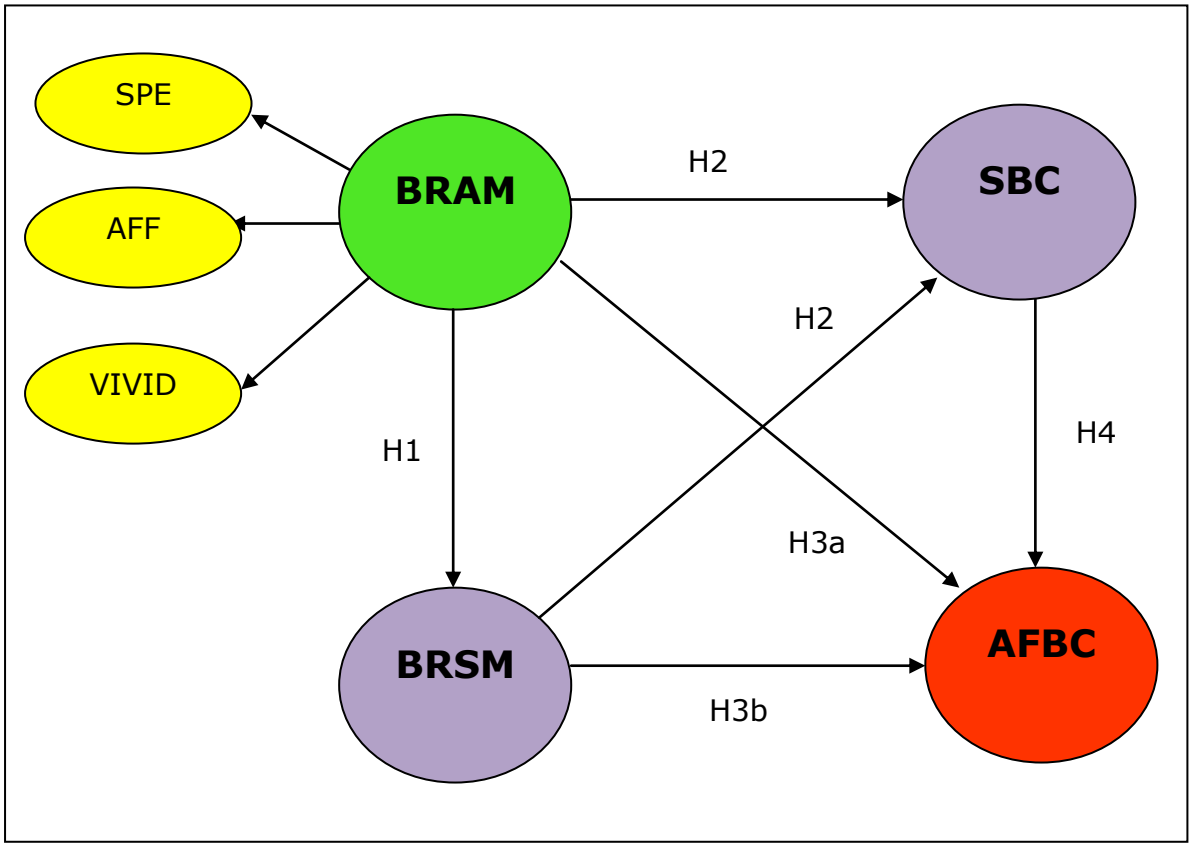
$$AVE = \frac{\Sigma \text{ (standardised loadings of 1 st-order on 2 nd order construct)}^2}{\Sigma \text{ (standardised loadings of 1 st-order on 2 nd-order construct)}^2 + (\Sigma \text{ 1 st-order error variance})}$$

Based on the above discussion, and assessing of reliability and validity, it is evident that the proposed second-order model supports proposition 4. In summary, the construct of BRAM can be expressed by three factors, Specificity, Vividness and Affect. In other words, these three factors parsimoniously explain the concept of BRAM.

## 6.5 Hypothesis testing

This section tests the four hypotheses stated in the introduction of this chapter. Mainly these hypotheses were tested through the results of the survey, by testing the Structural Equation Model developed in accordance with the proposed measurement model reproduced below as Figure 6-4. In order to test these hypotheses, alternative path models were specified, estimated and then necessary modifications were done before testing the hypotheses. Results of interviews and the experiment have also been used as supplementary approaches to test hypotheses 3 (a and b).

Figure 6-4: Measurement model– Brand-related memories (BRAM, BRSM), Self-Brand Congruence (SBC) and its influence on Affective Brand Commitment (AFBC).



### 6.5.1 Hypothesis testing procedure

Following Table 6-9 outlines the process followed in testing all relevant hypotheses and this process is discussed in detail before testing them.

Table 6-9: Hypothesis testing procedure

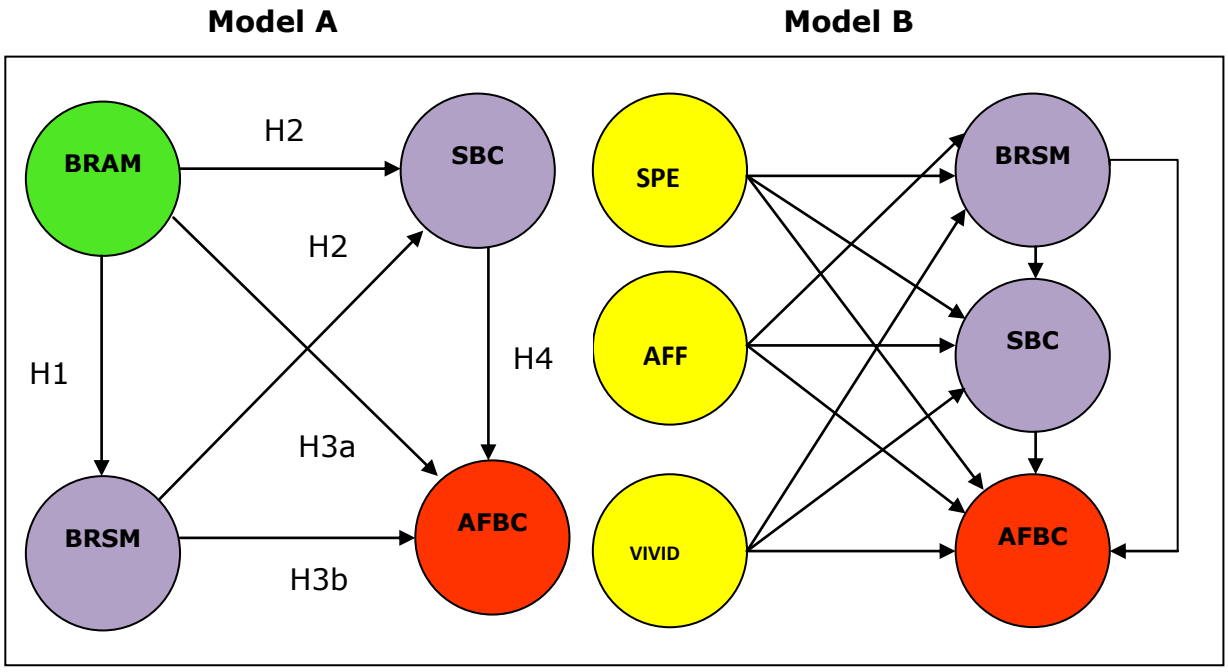
| **Step** | **Methodology** |
|---|---|
| Total Sample (n) = 303 | |
| 1. Develop the conceptual model. | Literature Review<br>Exploratory Study<br>Formation of Hypotheses |
| 2. Specify a Structural Path model | Structural Equation Modelling<br>Evaluation of goodness-of-fit indices, residuals<br>Re-specify based in the modification indices |
| 3. Evaluate the SEM model | Evaluation of goodness-of-fit indices |
| 4. Test hypotheses | Assess path coefficients<br>Examine t-values |

#### 6.5.1.1 Model specification

The SEM path model was specified using the SIMPLUS command language in LISREL 8.82 (Joreskog and Sorbom 1993). The hypotheses represented relevant paths as shown in above Figure 6-4. Taking all measures discussed in Chapter 4 (Sections 4.5.7, 4.5.8 and 4.5.9) into consideration, the SEM models were developed, purified and validated. These measures were checked for normality using the maximum likelihood estimation for the total sample of 303 before estimating the model (Please refer to Appendix 4.15 for normality scores). Figure 6-5 (p. 249) shows two alternative path models developed for selecting

the most suitable SEM model to test the relevant hypotheses based on the BRAM conceptualisation. Model A is the nested model or the hypothesised model that includes BRAM as a higher- order factor, whereas Model B shows three dimensionalities (specificity, vividness and affect) separately.

Figure 6-5: Alternative path models




It was only possible to specify two alternative path models that can be theoretically supported. As mentioned above, model A is the hypothesised, nested model that demonstrates BRAM as the independent variable, BRSM and SBC as mediating variables, and AFBC as the dependent variable in the SEM model. On the other hand, Model B investigates the relationship between three BRAM attributes individually towards BRSM, SBC and AFBC.

#### 6.5.1.2 Results comparison

Fit indices of the two path models are given below in Table 6-10. In order to select the measurement model, statistical test of the difference, absolute, relative and parsimonious fit indices (Rindskopf and Rose 1988; Schumacker and Lomax 2004) were considered.

As per Table 6-10 below, by considering the Chi-square difference and the degree of freedom between model A and B, results suggest that model B is most suitable. However, model B is a first-order factor model developed with other exogenous variables, and is not a nested model like model A.

Table 6-10: Fit indices of alternative models - A and B

| **Fit Indices** | **Model A (Hypothesised Model)** | **Model B (Alternative Model)** | **Model Selected** |
|---|---|---|---|
| ***Chi-square results*** | | | |
| d.f. | 220 | 214 | |
| Minimum Fit Chi-Square | 432.36 | 396.83 | |
| d.f/$X^2$ | 1.96 | 1.85 | B |
| P | 0.00 | 0.00 | |
| ***Absolute fit indices*** | | | |
| RMSEA | 0.057 | 0.051 | B |
| 90 % confidence interval for RMSEA | 0.049-0.064 | 0.042 – 0.059 | |
| P-value for test of close fit (RMSEA<.05) | 0.08 | 0.42 | |
| GFI(Goodness of Fit Index) | 0.89 | 0.90 | B |
| Standardized RMR | 0.072 | 0.053 | B |
| 90 % confidence interval for ECVI | 1.62 - 2.01 | 1.51 – 1.87 | |
| Critical N | 183.95 | 202.71 | B |
| ECVI saturated model | 1.83 | | |

| | | | |
|---|---|---|---|
| ECVI independence model | 19.51 | | |
| ***Relative fit indices*** | | | |
| CFI (Comparative fit index) | 0.96 | 0.97 | B |
| NNFI (Non-normed fit index) | 0.95 | 0.96 | B |
| NFI (Normed fit index) | 0.92 | 0.93 | B |
| **Parsimonious fit indices** | | | |
| Model CAIC | 808.33 | 797.53 | B |
| PNFI (Parsimony normed fit index) | 0.80 | 0.79 | A |
| PGFI (Parsimony Goodness of Fit Index) | 0.71 | 0.70 | A |
| AGFI (Adjusted Goodness of Fit Index) | 0.86 | 0.87 | B |
| Saturated CAIC | 1852.99 | | |
| Independence CAIC | 6001.28 | | |

Absolute fit indices measure the closeness of covariance derived from the parameter estimates of a model (Gerbing and Anderson 1993), while relative fit indices measure fit improvement (Hu and Bentler 1995). When the absolute fit indices were examined, both models showed a good and acceptable fits: The RMSEA is below 0.06 (0.057 in model A and 0.051 in model B) is considered as the cut-off point (Hu and Bentler 1999; Steiger 2007) ; GFI (goodness of fit index) is 0.90 or closer (0.89 in model A and 0.90 in model B) as Schumacker and Lomax (2004) and SRMR (Standardised Root Mean Square Residuals) are 0.053 in model B and 0.072 in model A, which are below 0.08 (Hu and Bentler's (1999). Yet, in comparison to model A, model B shows a better absolute fit, and therefore model B is most suitable to measure the hypothesised relationships.

Relative fit indices further support selecting the model B through CFI, NNFI and NFI. The Comparative fit index (CFI) is 0.96 in model A, and 0.97 in model B which are above 0.95 as claimed by Hooper, Coughlan and Mullen (2008); Non-

normed fit index (NNFI) is 0.95 in model A, and 0.96 in model B which are equal or above 0.95 (Hooper, Coughlan and Mullen 2008; Schumacker and Lomax 2004), and Normed fit index (NFI) is 0.92 in model A, and 0.93 in model B which are closer to 0.95 (Hooper, Coughlan and Mullen 2008; Schumacker and Lomax 2004).

Parsimony fit indices are very important in developing theories and therefore PNFI (Parsimony normed fit index), PGFI (Parsimony Goodness of Fit Index) and AGFI (Adjusted Goodness of Fit Index) were examined. Based on these indices, model A shows a better parsimonious effect in comparison to model B, by 0.1. With all these observations, model B (the alternative model) has been selected as the measurement model in examining hypothesised relationships.

#### 6.5.1.3 Hypothesis testing

As discussed through Figure 6-5 and Table 6-10, the SEM based on model B was used to test the four hypotheses. Figure 6-6 (p. 252) and Table 6-11 (p. 253) give statistical estimations of the path model relevant for testing all hypotheses.

Figure 6-6 : Measurement model- brand memories and its impact on brand commitment

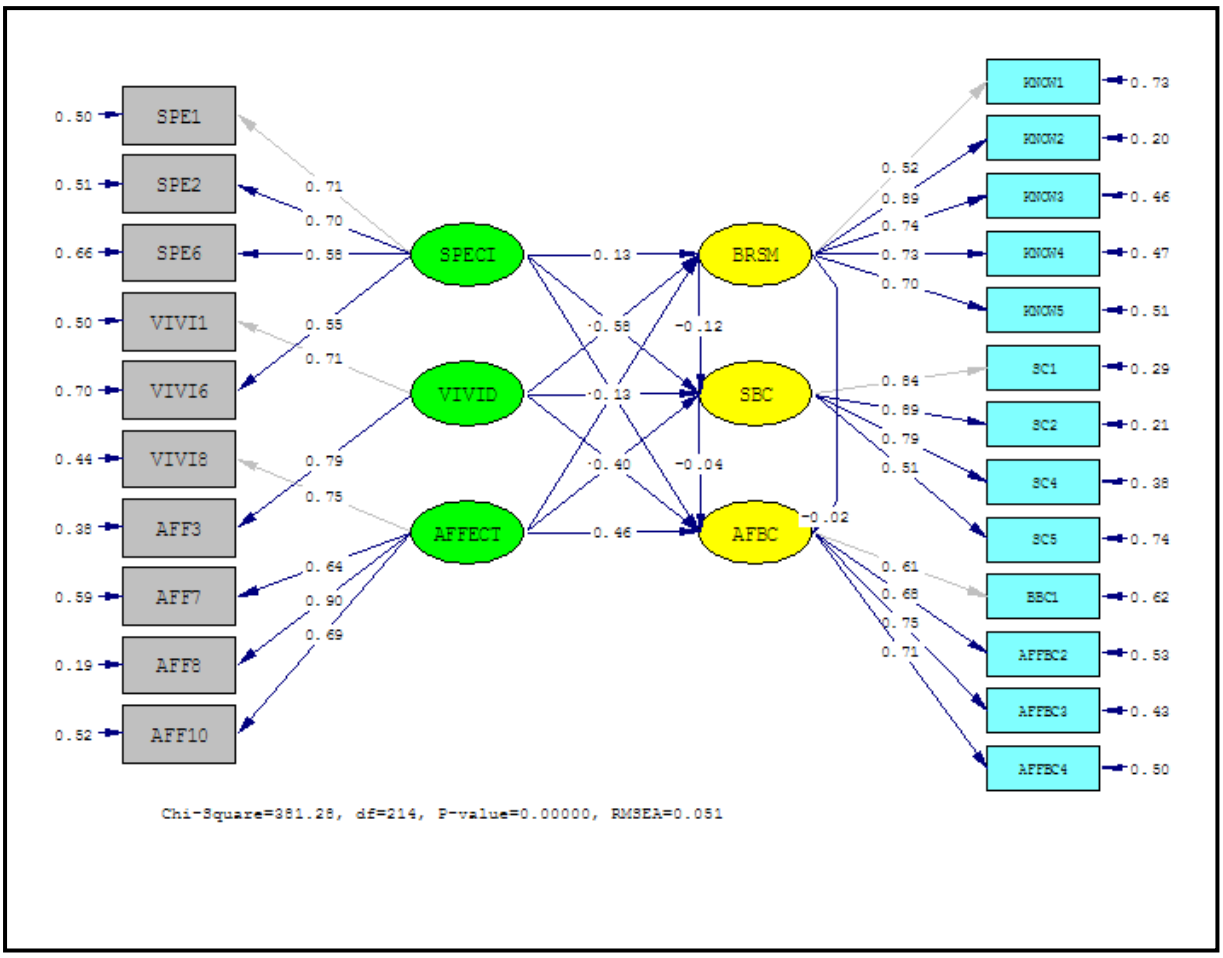


Table 6-11: Statistical estimation of the path model: Brand memories and predictive validity of brand commitment

| Hypotheses | | Causal Path | Standardised Path Coefficient | t –value | Status |
|---|---|---|---|---|---|
| H1 | BRAM positively affects BRSM. | Specificity → BRSM | 0.13 | 1.60 | Not supported |
| | | Vividness → BRSM | -0.09 | -0.75 | |
| | | Affect → BRSM | -0.09 | -0.79 | |
| H2 | Variance in self-brand congruence is explained more by BRAM than BRSM. | Specificity → SBC | **0.58** | **6.54** | Supported |
| | | Vividness → SBC | -0.05 | -0.45 | Not supported |
| | | Affect → SBC | -0.03 | -0.30 | |
| | | BRSM → SBC | -0.12 | -1.89 | |
| H3a | BRAM positively affects brand commitment. | Specificity → AFBC | 0.13 | 1.61 | Not supported |
| | | Vividness → AFBC | **0.40** | **4.06** | Supported |
| H3b | Variance in affective brand commitment is explained more by BRAM than BRSM. | Affect → AFBC | **0.46** | **4.91** | Supported |
| | | BRSM → AFBC | -0.02 | -0.36 | Not supported |
| H4 | Self-brand congruence positively influences affective brand commitment. | SBC → AFBC | -0.04 | -0.58 | Not supported |

In testing the hypotheses, t value above + 1.96 or less -1.96 was considered for the significance level at 0.05. Based on the statistics, the data supports hypotheses 2 and 3 but not hypotheses 1 and 4. The following sections discuss these results by examining each hypothesis in detail.

### 6.5.2 Hypothesis related to BRAM and BRSM

Hypothesis 1 examined the relationship between the BRAM attributes; specificity, vividness, affect and BRSM. The standard path coefficient between specificity and BRSM was 0.13 with a t-value of 1.60; vividness and BRSM was -0.09 with a t-value of -0.75, and affect and BRAM was -0.09 with a t-value of -0.79. Based on the t-values, the null hypothesis cannot be rejected and therefore there is no evidence to support the H1, i.e. there is no relationship between three BRAM attributes: Specificity, Vividness, Affect and BRSM.

### 6.5.3 Hypothesis related to BRAM, BRSM and SBC

Hypothesis 2 examined the relationship between BRAM attributes (Specificity, Vividness and Affect), BRSM and SBC. The standard path coefficient between specificity and SBC was 0.58 with a t-value of 6.54 and therefore there is evidence to support that SBC can be explained by the Specificity of BRAM. However, Vividness and Affect do not support this hypothesis as the standard path coefficient between Vividness and SBC is -0.05 with a t-value of -.0.45 while the standard path coefficient between Affect and SBC is -0.03 with a t-value of -0.30 respectively. In the relationships between BRSM and SBC, results reported a standard coefficient of -0.12 with a t-value of -1.89 that does not support any relationship. Taking these results together, Specificity of BRAM (but not BRSM) only explains self-brand congruence whereas Vividness and Affect do

not.

### 6.5.4 Hypotheses related to BRAM, BRSM and AFBC

There were two hypotheses related to affective brand commitment; the positive influence of BRAM attributes on AFBC and the greater explanation of AFBC by BRAM attributes than BRSM. Although positive standard path coefficients were reported as 0.13, 0.40 and 0.46 for Specificity, Vividness and Affect respectively, the respective t-values were 1.61, 4.06, 4.91.Therefore, the positive relationship was significant only between Vividness and Affect towards AFBC. Importantly, the standard coefficient between BRSM and AFBC was -0.02 with a t-value of -0.36, supporting the hypothesis that the Vividness and Affect attributes of BRAM provide a greater explanation of the variance of AFBC than BRSM.

As depicted in Table 6-1, this hypothesis was further supported by the qualitative interview findings and the fMRI experiment behavioural data. These findings are discussed in Sections 6.5.4.1 and 6.5.4.2 below.

#### 6.5.4.1 Interview results

The final objective of the qualitative interview was to investigate the relationships between informants' BRAM and its impact on their future branding decisions. Importantly the majority of the BRAM revealed future purchase intentions and affective brand commitment as shown in Table 6-12 (p. 257) (Please refer to Appendix 6.5 for a complete analysis). In contrast, a clear relationship between BRSM and future preference was not explored by informants' expressions as discussed in Table 6-13 (p. 258), but was more towards having a positive attitude towards respective brands. Thus, the

relationship between BRSM and future preference and AFBC was not discovered from the qualitative data provided. Thus, by careful examination of the narratives provided by informants through the qualitative interviews, it is fair to judge that BRAM attributes have more positive connotations towards brand commitment than BRSM.

#### 6.5.4.2 fMRI experiment

This hypothesis was examined using the pre-scan survey results with 18 subjects. In neuroimaging studies, small sample size is the norm in accepting results, whereas in behavioural studies, a sample size of 18 is a limitation in making inferences. Therefore, this analysis is only used to support and triangulate the survey results rather than for statistically testing the above hypothesis. The relationship between the intensity of memory in each condition and affective commitment was examined through the correlation and regression coefficients as depicted in Table 6-14 (p. 258).

Table 6-12: Relationship between BRAM and AFBC

| | **BRAM** | **Brand** | **Degree of Specificity** | **Affect** | **Ability to Imagine** | **Brand Commitment** |
|---|---|---|---|---|---|---|
| 1. | Waterston's Saturday in London | Waterstone's | High | Lovely, Emotional attachment | Yes | I always go to Waterstone's and definitely will continue. I think it is an emotional attachment. |
| 2. | Winning the Rugby world cup | Adidas | High | Good<br>Awesome | Yes | I always buy Adidas football boots. |
| 3. | Playing with friends | Rimmel | High | - | Yes | I still use this brand. |
| 4. | Seeing mum making a drink to sister | Nestle | High | Feel as a baby | Yes | I've been following the brand ever since. |
| 5. | B'day gift from Dad for 18th B'day | Designer bag | High | Good | Yes | As long as I can afford it, I'll go for it. |
| 6. | Brushing teeth and seeking for the ring of confidence | Colgate | High | Happy | Yes | I've influenced another generation, As long as I buy any variant of Colgate, my family is ok. |
| 7. | Dinning with family | Fray Bentos | High | Happy | Yes | I do buy them when I do my weekly shopping. |
| 8. | Costume day in school | Superman | High | Love<br>Happiest | Yes | I have a loyalty towards it more than anything. |
| 9. | Gift from an uncle came from Canada | CK | Moderate | Love | Yes | Now I 'am attached with CK perfume. |
| 10. | Attending an overseas conference in Africa | Samsung | Moderate | Spiritual<br>Emotional | Yes | I don't know why I like to buy Samsung. I really have no reason for it, But I always go for Samsung. I really go for it. |

Table 6-13: Relationship between BRSM and brand preference

| **BRSM – Brand** | | **Brand commitment /Future preference** |
|---|---|---|
| 1. | Audi | For my next car, I'll have a choice between Audi and BMW. |
| 2. | Johnson and Johnson | It is mild, and doesn't cause skin allergy……. I like Dove at the same time. |
| 3. | Dorothy Perkins | It's the comfort, right fit and the design…… No I don't think I'm committed to this brand. I'm not brand conscious when it comes to clothes. |
| 4. | McVities | I like the taste and better quality. |
| 5. | O2 | Reasonable price and quality, that's why I like it. |

Table 6-14: Correlation and regression coefficients between memory activation (uBRAM, pBRAM and BRSM) and AFBC

| **Statistics** | **uBRAM** | **pBRAM** | **BRSM** |
|---|---|---|---|
| ***Correlation*** | | | |
| Pearson Correlation Coefficient | 0.851** | 0.546* | 0.428 |
| Significance | 0.000 | 0.019 | 0.076 |
| Spearman correlation Coefficient | 0.804** | 0.497* | 0.571* |
| Significance | 0.000 | 0.036 | 0.013 |
| **Regression** | | | |
| $R^2$ | 0.724** | 0.298* | 0.183 |
| Significance | 0.000 | 0.019 | 0.076 |

** Correlation is significant at 0.01level.
* Correlation is significant at 0.05 level.

Figure 6-1 above displayed brand memory activation in human brain in four memory conditions, and the behavioural responses were obtained for those activations through the AM and SM memory scale items to assess the memory intensity towards AM and SM associated brands (i.e. in three conditions: uBRAM, pBRAM and BRSM). This memory intensity was considered as the independent variable while brand commitment towards those brands was considered as the dependent variable. Based on the correlation coefficients and $R^2$ , uBRAM shows a strong positive relationship between memory recall and brand commitment while pBRAM shows a positive moderate relationship. Yet, the relationship between BRSM and brand commitment is not significant and therefore does not predict brand commitment implications upon SM retrieval.

### 6.5.5 Hypothesis related SBC and AFBC

Hypothesis 4 examined the relationships between SBC and AFBC, and the standard path coefficient reported as -0.04 with a t-value of -0.58. This result statistically does not support a significant positive relationship between SBC and AFBC and therefore there is no evidence to support the hypothesis 4.

## 6.6 Summary

This chapter investigated and tested propositions and hypotheses in the study through the methodological triangulation of three empirical studies. The following Table 6-15 (p. 260) includes the summary of key findings relevant to propositions and hypotheses (acceptance or rejection).

Table 6-15: Summary of findings

| Propositions and Hypotheses | | Interview Results | FMRI Experiment Results | Survey Results |
|---|---|---|---|---|
| P1 | Brand-related memories will be predominantly represented in either AM or SM. | Supported | Supported | |
| P2 | Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM. | | Supported | |
| P3 | Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM. | | Supported | |
| P4 | Specificity, vividness and affect are reflective of BRAM. | Supported | | Supported |
| H1 | BRAM positively affects BRSM. | | | Not supported |
| H2 | Variance in self-brand congruence is explained more by BRAM than BRSM. | | | Supported for Specificity<br>Not supported for Vividness and Affect |
| H3a<br><br>H3b | BRAM positively affects brand commitment.<br>Variance in affective brand commitment is explained more by BRAM than BRSM. | Supported | Supported | Supported for Vividness and Affect<br>Not Supported for Specificity |
| H4 | Self-brand congruence positively influences affective brand commitment. | | | Not supported |

# Chapter 7 : DISCUSSION

## 7.0 Introduction

The previous Chapter 6 discussed the results of the three main empirical studies (qualitative interviews, fMRI experiments and the survey) in testing relevant propositions and hypotheses developed through the conceptual review. A summary of key findings investigated in the study is provided in Table 16.5 (p. 260). The aim of this chapter is to collate and discuss the conceptual knowledge and the results presented in previous chapters. This chapter discusses the results in detail by reflecting on how this investigation contributes to the knowledge in consumer research, specifically in the area of brand-related memories and their impact towards self-brand congruence theory and brand commitment relationships.

The chapter is organised in two main sections; Section 7.1 aims to reflect on the results related to four propositions while Section 7.2 reflects on the results related to the four hypotheses investigated in the study.

## 7.1 Discussion Part 1: propositions measured in the study

Four propositions were examined in the study and all these were supported by the data analysis. The following sections discuss these four positions in detail.

### 7.1.1 Representation of brand-related memories in AM or SM

Proposition one investigated whether brand-related memories are predominantly represented in either AM or SM using qualitative data and neuroimaging data. As detailed in the results Chapter 6 (Section 6.1.1), findings suggest that brands

can be pre-dominantly represented in AM or SM. Informants' narratives included brand-related memory events that were rich in contextual and situation details, with the ability to imagine as if they were happening and were emotionally associated. These 'lifetime' brand-related personal experiences recalled from their memories confirm the existence of brand-related memories in AM or BRAM. On the other hand, where informants only recalled brand attributes and characteristics related to their experiences, this reflects abstract brand knowledge or facts about brands, which is SM information about brand experiences.

In order to examine the above proposition physiologically, the fMRI experiment investigated whether brands are expressed separately in autobiographical memory and/or semantic memory so that a clear distinction can be made between BRAM and BRSM at the behavioural level. From the findings detailed in Chapter 6 (Section 6.1.2), experiment results confirm the predominant existence of brand memories either in AM and SM by showing physiological activation of the relevant areas of AM and SM upon brand stimuli exposure. Specifically, AM-related brands are activated in the areas of ventrolateral prefrontal cortex, middle frontal gyrus (dorsolateral prefrontal cortex) and cingulate cortex areas that are consistent with previous studies of AM activation (Burianova and Grady 2007; Steinvorth, Corkin and Halgren 2006; Maddock, Garrett and Buonocore 2001; Fink et al. 1996), while activation of the inferior frontal gyrus, middle frontal gyrus, and the thalamus was observed during SM-related brands, resembling the findings of Burianova and Grady (2007).

These findings have a significant importance in consumer memory research because the study investigated the consumption memories related to the separate long-term memory systems dichotomy (i.e. episodic nature of AM and SM) conceptualised and applied in other disciplines such as psychology and neuroscience (Baddeley, Eysenck and Anderson 2009; Steinvorth, Corkin and Halgren 2006; Gilboa 2004;Tulving 1983) enhancing our understanding that brand experiences are stored differently in the consumer's mind for memory-based decision making. This separation of AM highlights the importance of AM in human behaviour as discussed in sociological literature on developing social relationship and maintenance (Bluck and Gluck 2004; Pratt et al. 1999; Nelson 1993) applicable and relevant to consumption experiences. This study identified brand-related memories in AM and SM rather than investigating memory in general or semantic terms, as is common with memory studies in consumer behaviour research, which may differently influence consumption behaviour.

### 7.1.2 Self-relevance associated with BRAM and BRSM

Proposition two examined the activation of self-construal areas associated with AM-associated brands and SM-associated brands through the neuroimaging data. The findings reported that self-construal areas such as ventrolateral prefrontal cortex and dorsolateral prefrontal cortex are activated with AM-associated brands whereas such activation was not evidenced with SM-associated brands. These physiological findings evince the difference between AM and SM memories in relation to self-relevance in brand consumption experiences, as self- relevant brand-related memories are stored in AM whereas brand-related memories that are not self-relevant are stored in SM. These findings further validate the existence of two types of brand-related memories;

BRAM and BRSM in consumers' minds, which has been under-investigated in previous studies in consumer memories.

Importantly, self-relevance is an important research theme in consumer behaviour. For instance, Belk (1988) posited that the degree of consumer self-relevance influences one's motivation and consumption towards a product or service. Slama and Tashchian (1985) conceptualised the purchasing involvement as a general measure of the self-relevance of purchasing activities. Chung and Darke (2006) found greater positive word of mouth for products that are self-related than utilitarian products. Kardes (1988) discovered powerful information processing as a consequence of consumers' feelings of self-relevance. Further, Celsi and Olson (1988) argued that products and services that are self-relevant are instrumental in achieving important goals and values. Thus, this self-relevance of memories such as AM compared to SM has more relevance to brand-related information processing, decision-making and behaviour.

As evidenced above and discussed in Chapter 3, self-relevance of AM is the most significant feature that separates AM from other types of memory systems (Brewer 1986) that was consistent and confirmed from the above findings. As a result, BRAM may have the capacity to influence one's emotions and life satisfaction levels through brand consumption experiences as suggested by Conway and Tacchi (1996) and Robinson (1986) in AM studies. Consumers may be satisfied and feel happy from recalling self-related pleasant BRAM and the opposite may result from recalling unpleasant self-related BRAM, supporting the views of Tversky and Griffin (1991) and Wilson (2000).

### 7.1.3 Affect associated with BRAM and BRSM

Proposition three examined the activation of affect-associated areas in the brain during BRAM and BRSM recall through the neuroimaging data. It is expected to have a greater activation of affect-associated areas in BRAM retrieval than BRSM. Although extant studies discovered emotions and feelings activation in the regions of the limbic cortex; ventromedial prefrontal area (Fink et al. 1996; Markowitsch 1998; Piefke et al. 2003); medial frontal gyrus, posterior cingulate gyrus and angular gyrus (Greene et al. 2001; Maddock 1999), only ventromedial prefrontal area activation was verified with BRAM recall while no activation of affect associated areas was evidenced in BRSM recall.

Based on these findings, to a certain extent (as not all emotional areas are activated) it is clear that feelings and moods associated at the time of personal experience are also experienced at the time of BRAM retrieval, whereas such emotional activation is not associated with BRSM. This is a key difference between BRAM and BRSM and has important implications in consumer decision-making paradigms.

According to Shiv and Fedorikhin (1999), consumer research has been predominantly cognitive in nature, and affect has received little attention. However, the concept of affect has been researched in advertising (Batra and Stayman 1990; MacKenzie Lutz and Belch 1986) and consumer satisfaction (Dube, Belanger, and Trudeau 1996; Oliver 1993) yet not much in consumer choice and decision-making (Shiv and Fedorikhin 1999). Thus Shiv and Fedorikhin's (1999) examined how consumer decision making is influenced by affect and cognitions between two alternative products (one with intense positive

affect and less favourable cognitions and the other with the opposite), and findings suggested that when processing resources are limited, affective reactions have a greater impact on choice compared to cognitions.

Similarly, several studies have investigated the influence of feelings, emotions and moods in the consumption process. Lee and Sternthal (1999) through four studies examined the effect of mood on the learning of brand names, and findings confirmed that a positive mood enhances the learning of brand names, compared to a neutral mood. In print advertising, Batra and Stayman (1990) found that positive mood results in more heuristic processing, and less elaboration and message evaluation. Barrena and Sanchez (2009) discovered that in wine consumption emotions vary with the age of the consumer while Edell and Burke (1987) revealed that feelings towards advertisements have a greater influence on brand attitude than judgements. Han, Lerner and Keltner (2007) recently presented the influence of specific emotions on consumer decision making through the Appraisal-Tendency Framework (ATF).

These studies reflect the importance of affect in consumer decision making, although affect- related memories have not been a notable topic in the discipline, they may have important consequences in consumer decision-making. This study therefore identified and discovered that affect is essentially associated with BRAM in comparison to BRSM and may influence in the consumer decision-making process more than BRSM, due to the affect association in AM. This phenomenon is discussed further in the following sections.

### 7.1.4 BRAM attributes: Specificity, Vividness and Affect

In addition to the support given for proposition three above, related to the affect association related to BRAM, proposition four investigated the manifestation of BRAM through qualitative data and survey data. The objective was to identify the dimensions of BRAM: Specificity, Vividness and Affect. According to the qualitative findings reported in Chapter 6 (Sections 6.4.1.1, 6.4.1.2 and 6.4.1.3 in Section 6.4.1), when respondents recollected lifetime personal memories related to brands (BRAM), they remembered contextual details, they could imagine the experience through sensory forms and those experiences were associated with positive emotions and feelings. Therefore, qualitative data suggests that BRAM consists of Specificity, Vividness and Affect (contextual, perceptual and affective information) in addition to brand knowledge. In order to support this proposition through survey data, a second-order factor model was specified and measured in Chapter 6 (Section 6.4.2.1, 6.4.2.2 and 6.4.2.3), and findings confirm the three dimensions of BRAM as Specificity, Vividness and Affect. These findings have direct and significant implications in measuring advertising induced brand memory, brand evaluation and future decision-making.

Mainly there are two measurement indicators for measuring advertising effectiveness: recognition and recall tests. According to Haist, Shimamura and Squire (1992), both recall and recognition memory tests depend on declarative memory, and consumers can explicitly evaluate their memory either by retrieving items (recall) or making judgements as to whether or not items are familiar (recognition). However, cognitive psychology has shown that

memory performance is context-sensitive and dependent on factors related to the person and situation (Jenkins 1974). Autobiographical referencing may have an impact upon such recall tests because contextual, perceptual an affective information stored in AM related to the advertised brand may influence on the degree of recall while BRSM recall may be independent of such intervention. Keller (1987) discovered the impact of context sensitivity of ad information in consumer memory, and to this end, marketing organisations use autobiographical advertising as a means to create and evoke nostalgia for their products and services. Importantly Braun, Ellis and Loftus (2002) found that autobiographical advertising influences how consumers remember their past. Specifically, autobiographically focused advertising leads consumers to believe that those events have actually happened during their childhood memories, creating false or distorted memory. Thus, when consumers have BRAM, and brand recall tests are performed, these recall tests may be successful due to the AM association of such brands and perhaps not necessarily due to the effectiveness of the advertising message and content. Thus, this effect can be carefully differentiated through using the BRAM scale developed above as a complementary measure to advertising recall.

According to Biel (2005), recall and recognition tests attempt to measure whether or not there is a memory trace (i.e. whether consumer has a memory of the advertisement and/or the brand) while persuasion considers the effect the ad might have on behaviour or motivation to purchase.
In measuring persuasion, a pre-post-exposure evaluation is conducted (i.e. consumers will be asked whether they intend to purchase something, after they have seen the advertisement but before they have made a purchase). The

weakness of this is strategy is that it does not take full account of the complex effects of memory and time delays on the impact of the commercial. Here again, the BRAM attributes related to the brand concerned may be relevant and may play an important role in the purchase decision persuasion. The influence of BRAM attributes in such behavioural implications (i.e. affective brand commitment) is discussed below.

## 7.2 Discussion Part 2: hypotheses measured in the study

Four main hypotheses were examined in the study using the data analysis of all three empirical studies. Hypotheses 1, 2 and 4 were tested mainly using the survey data, and hypotheses 3a and 3b used both qualitative data and neuroimaging behavioural data to test the hypotheses in addition to the survey data. The following sections discuss these four main hypotheses in detail.

### 7.2.1 The relationship between BRAM (Specificity, Vividness and Affect) and BRSM

Hypothesis one predicted a positive relationship between BRAM (Specificity, Vividness and Affect) and BRAM. The survey data was used to test this hypothesis by specifying and measuring the structural equation model as detailed in Chapter 6 (Section 6.5.2). Results were statistically not significant so the null hypothesis could not be rejected and therefore no relationship was evidenced between BRAM and BRSM.

This hypotheses was derived purely based on the studies in psychology and neuroscience, where physiological experiments have been conducted on AM and SM systems, mainly due to the lack of such studies in consumer research.

However, in terms of brand-related memories, there can be situations where experiences in consumer memories are reconstructed or reengineered gradually with stronger marketing communication influences in the light of today's competitive marketing environment through persuasive advertising campaigns. This type of reconstruction and influence would not have existed in pure memory studies when a positive relationship between AM and SM was discovered. Shapiro (2006), Braun–LaTour et al. (2004) and Braun Latour, Ellis and Loftus (2002) have investigated this reconstruction of memories in consumer research, and from a reconstructive perspective, Braun-LaTour et al. (2004) suggested that advertising can exert a powerful retroactive effect on how consumers remember their past experiences with a product. With two empirical investigations, Braun, Ellis and Loftus (2002) posited that autobiographical referencing in advertising could lead to the creation of false or distorted memory. Importantly Shapiro (2006) presented a model that demonstrated changes in consumers' recollection of their experiences with a product through advertising. Thus, non-existence of a positive relationship between BRAM attributes and BRSM may be possible when advertising and other modes of communication have had more emphasis and influence over one's BRAM.

### 7.2.2 The relationship between BRAM (Specificity, Vividness and Affect) and SBC

Hypothesis two predicted that the difference of self-brand congruence can be explained more by BRAM attributes (Specificity, Vividness and Affect) than BRSM. Based on the statistics, self-brand congruity is mainly explained by specificity of BRAM. Thus, it is evident that contextual details or situational information associated with BRAM helps to form a congruence relationship with

one's self and the brand associated in AM. Although this is an original contribution to the theory from the different memory systems perspective, studies have validated the influence of situational characteristics on self-brand congruence.

Belk (1975) identified social surroundings as one of five groups of situational characteristics that influence consumer behaviour while Back (2005) and Parker (2009) posited that self-image congruence is strong in conspicuous consumption situations. Thus, social surroundings provide additional depth to a description of a consumption situation including other person's presence, their characteristics, their apparent roles, and interpersonal interactions that may be AM-associated and may have more relevance to SBC. As Escalas (2004) posited, the personal meaning associated with a brand can be derived from an individual's personal experience with the brand, and in self-brand congruence, this brand meanings are used to construct one's self or to communicate one's self to others, and in that way, a strong self-brand congruence is formed. Graeff (1997) and Jamal and Goode (2001) posited the importance of situational variables in self-congruity and brand preference. Thus, specificity or contextual information in BRAM explains self-brand congruence while such explanation cannot be made with BRSM due to the non-existence of contextual details in BRSM.

However, for the other two BRAM attributes: Vividness and Affect, data analysis did not statistically support a significant relationship with self-brand congruence. Although Moore and Homer (2008) and Escalas (2004) have posited that recollection of vivid BRAM should have a direct and positive influence on SBC, this relationship was not evidenced in the study. There are previous studies that

investigated the vividness of advertising messages and its impact on consumer judgements, and surprisingly attitudinal judgements have not been affected by the vividness of stimulus information. Borgida (1979) and Gottlieb, Taylor, and Ruderman (1977) have manipulated vividness by concrete and abstract versions of a message while Manis et al. (1980) used different presentation formats, and found that attitudinal judgements are unaffected by the vividness of information. In addition, vividness is directly associated with the style of information processing (i.e. pictures vs. words) and the capacity (Childers, Houston, and Heckler 1985; Blajenkova, Kozhevnikov and Motes 2006). Because this study was limited in investigating the information processing aspects using visual brand images, these results could be due to lack of knowledge of the information processing capacity of the sample.

Empirical results did not support the hypothesised relationship between the affect and self-brand congruence. Levy (1959) asserted that people do not buy products just for what they do, but for what the product means. In other words, brands can be symbols whose meaning is used to create and define a consumer's self-concept. Thus, a congruency is formed between one's self-image and brand-image (Escalas and Bettman 2005), and a consumer may strive to create a brand image that is similar to (congruent with) the self-image (Aaker and Biehl 1993; Graeff 1996). These brand images are derived mainly through symbolic benefits of a brand rather than emotional benefits that may be evoked through BRAM recall. Although affect-laden BRAM are self-relevant, these symbolic benefits may dominate in creating a self-brand match, and therefore it is possible not to have direct links between affect and self-brand congruence. In a recent investigation, Malar et al. (2011) posited that consumers'

relationships between self-congruence and emotional attachments are complex, and vary by consumer's product involvement, consumers' individual difference variables and the type of self-congruence (actual self versus ideal self). Their investigation discovered that actual self-congruence is highly associated with emotions in comparison to the ideal self-concept. This study focused on 'global self-concept' rather than different aspects of self, and therefore, it may be possible to deviate from the expected positive relationship with emotions and self-brand congruence. Importantly Malar et al. (2011) found that self-cogruence and emotional attachment are strong at a high level of self-esteem or public self-consciousness and this further confirms the prevalence of symbolic benefits in self-brand congruence that can be created by suppressed affect.

### 7.2.3 The relationship between BRAM (Specificity, Vividness and Affect), BRSM and AFBC

Two main hypotheses were investigated in relation to the affective brand commitment, and these two are discussed separately. Hypothesis 3a examined whether there is a positive relationship between BRAM (Specificity, Vividness and Affect) and affective brand commitment while hypothesis 3b examined the strength of the relationship between BRAM attributes and affective brand commitment in comparison to BRSM.

In order to support this hypothesis, both qualitative and fMRI experiment data have been used. Qualitative narratives associated with BRAM (all BRAM attributes parsimoniously) express connotations toward affective commitment towards those brands and fMRI behavioural data shows a stronger positive relationship between BRAM (all BRAM attributes parsimoniously) than BRSM.

Survey data statistically support a positive relationship between the BRAM attribute of Vividness and brand commitment showing a medium effect while no relationship was found between Specificity and affective brand commitment. Kelley, Gaidis and Reingen (1989) and Kisielius and Sternthal (1984) posited that vividly presented information enables more access from memory and weighs more heavily in consumers' judgements while a communication message is more memorable and persuasive if vivid stimuli are included in the message (Kisielius and Sternthal 1984, 1986; Taylor and Thompson 1982). Kisielius and Sternthal (1984) also contended that vivid information influences consumers' attitudinal judgements. Thus, consistent with these studies, the result of this study shows that Vividness of BRAM positively influences brand commitment decisions, whereas BRSM does not support making brand commitment decisions.

Survey data statistically support a positive relationship between Affect associated with BRAM and brand commitment, showing a medium effect. This is consistent with studies that discovered brand affect as an important antecedent of brand loyalty. Drawing on the brand relationships theory, Fournier (1998) and Grundlach et al. (1995) found a strong impact of brand affect on attitudinal and purchase loyalty. Dick and Basu (1994) suggested a higher brand loyalty under conditions of positive emotional mood and affect while Chaudhuri and Holbrook (2001) found an increase in purchase and attitudinal loyalty when brands make consumers happy, joyful or affectionate. Thus, the study enhances our understating by investigating Affect from a memory perspective and its influence towards brand commitment decisions. Importantly, from a multiple memory systems' perspective, affect-laden BRAM influences AFBC and affect-independent BRSMs do not evince such relationships.

Taken together, these results are significant towards memory studies in consumer behaviour as only BRAM contributes towards affective brand commitment in comparison to BRSM. Theoretically, it is important to know that even though consumers have positive brand experiences in memory or in semantic form, they may not necessarily add towards brand commitment unless such brand memories are vivid and affect-associated AM.

Survey data does not support the relationship between Specificity and affective commitment. Although contextual information is important in creating and forming self-brand congruence relationships, from a memory perspective, BRAM related to childhood and teenage memories may not be very relevant in current purchase decisions such as brand loyalty and commitment. This is mainly because as time passes, with life transitions, one's consumption situations, environments and circumstances change, and as a result, although consumers may have nostalgia about such brands, contexts and memories, it may not necessarily influence their future purchase decisions.

### 7.2.4 Relationship between self-brand congruence and affective brand commitment

This hypothesis examined whether self-brand congruence positively relates to affective brand commitment, and based on the statistical analysis of survey data, no relationship was evidenced between these two constructs. Extant studies in this area have shown that self-brand congruity play an important role in brand satisfaction, attitude and loyalty (Kressman et al. 2006; Sirgy et al. 1991; Sirgy and Samli 1985). Although the relationship between SBC and AFBC has not been investigated significantly in the marketing relationships literature

(Zhang and Bloemer 2008; MacMillan et al. 2005), a direct and positive relationship between value congruence (similarity between personal values and the values associated with an object, such as a product or service) and affective commitment has been evidenced through the studies of Arthur et al. (2006), Ostroff, Shin and Kinicki (2005), Cable and Edwards (2004) and Finegan (2000). However, extant studies in the contexts of consumer-brand relationship indicate the influence of demographic factors (Yang and Peterson, 2004; Homburg and Giering, 2001) and Evanschitzky and Wunderlich (2006) found the link from cognitive loyalty to affective loyalty is significantly higher for older than for young consumers. Cooil et al. (2007) and Mittal and Kamakura (2001) reveal that changes in satisfaction are less likely to affect consumer retention when consumers are older. Lambert-Pandraud, Gilles and Lapersonne (2005) argue that older consumers find feelings and emotions more important than younger consumers' do, thus they are more interested in their emotional experience with a brand. In terms of gender, women tend to appreciate products and services for symbolic reasons (Hsieh et al. 2004; Dittmar, Beattie and Friese 1995) while men appreciate goods or service more for functional reasons. As this study did not focus on the moderating effect of demographic variables (the sample consisted of respondents from a wide age range), the sample characteristics may have not led to such a positive relationship.

On the other hand, the self-brand congruence relationship is formed not only on the functional (or utilitarian) attributes of brands, but also importantly on the symbolic meanings (Sirgy and Su 2000; Sirgy et al. 1997; Johar and Sirgy 1991). These symbolic meanings may change with the age of a person and with life transitions. Elliot (1994) posited that symbolic meaning is age dependent

while Chaplin and John (2007) discovered age differences on materialism and self-esteem. In the study, the relationship between SBC and AFBC has been investigated based on their significant personal lifetime memories that spread over different ages and life transitions. In the current context, these consumers are in different age groups and life stages compared to when they experienced the autobiographical event. Thus, the respondents may not necessarily have the same strong match between the brand meaning and self, and hence no longer be committed to those brands.

Although many studies have discovered a strong relationship between SBC and AFBC, this study looked into the relationship from a memory perspective spreading across respondents' lifetime events. When they become mature and elderly with relative life stage changes, their personal self-traits may tend to develop and change. As a result, although they had a strong relationship with the brand at the time of consumption, this relationship can be diluted because of self-concept changes.

The non-existence of a positive relationship between SBC and AFBC relationship may also be possible due to the influence of external marketing variables. Consumers may have a strong match between brands and self, yet they may not necessarily have an affective commitment towards those brands for a long period when they know about various external marketing variables such as new products, better prices, attractive promotions etc that may better satisfy their wants. The diversity of brands in a product class made available in the market place from time to time may lead to a better fit with one's self image than previous brands did. Consumers may tend to experiment with new brands as a

result of better brand attributes (either utilitarian or symbolic), peer pressure and attractive promotions, or as a result of changing circumstances (e.g. an individual may suddenly face financial difficulties by losing his/her job, and as a result, s/he may not be in a position to buy the same expensive perfume that matches his or her self-image). In addition, the self-brand match may be due to utilitarian benefits derived from such brands and not necessarily through brands associated with lifetime emotional associated brands. Thus, it is possible not to have a positive relationship between SBC and AFBC derived from AM associated brands.

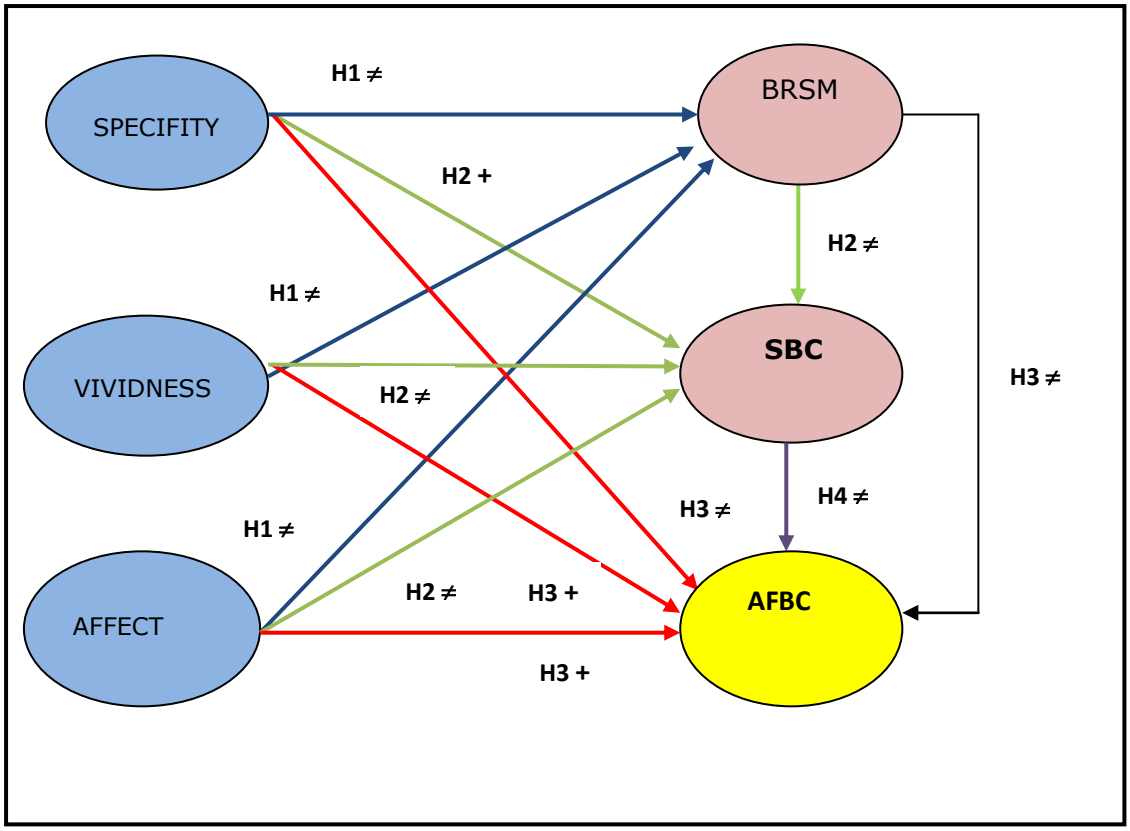
## 7.3 Summary

This chapter discussed the findings related to the propositions and hypotheses examined in the previous chapter through the empirical data obtained by the methodological triangulation. Part 1 of this chapter aimed at discussing the propositions. From the propositions, it is apparent that brand memories are stored in either AM or SM, consistent with the multiple memory systems theory. BRAM are self-relevant and affect laden in comparison to the BRSM. Importantly, the second-order model confirmed the three dimensionalities of the BRAM scale: Specificity, Affect and Vividness that can be deployed as complementary measures to investigate brand experiences and advertising effectiveness.

Part 2 of this chapter discussed the hypothesised relationships between the BRAM (Specificity, Affect and Vividness), BRSM, SBC and AFBC, and assessed the nomological validity of the BRAM construct. In this nomological assessment, Specificity behaved differently than the other two dimensions: Affect and Vividness. Through the results, it is clear that Specificity is positively associated

with SBC while Vividness and Affect are not. Importantly Vividness and Affect influence AFBC while Specificity does not. Thus, it is fair to judge Specificity as a distinctive construct that measures contextual details associated with brand memories and BRAM as a separate construct with two dimensions (Affect and Vividness). These results are consistent with the extant literature as SBC is formulated through symbolic benefits, where situational and social contexts have important implications for BRAM and BRSM. In BRAM, BRSM and AFBC relationships, BRAM (Affect and Vividness) influences AFBC more than BRSM providing insights on thegreat importance of affect-laden BRAM rather than BRSM in cognitive vs. emotional decision- making models. The Figure 7.1 shows the extent of relationships tested through the hypotheses.

Figure 7-1: Relationships between BRAM attributes, BRSM, SBC and AFBC



# Chapter 8 : CONCLUSION

## 8.0 Introduction

The previous chapter was dedicated to the discussion of main findings based on the data analysis through methodological triangulation. Following from the discussion of findings, this chapter mainly focuses on two areas:

1. To identify the main contributions of the study
2. To demonstrate general limitations and identify future research directions

In order to set the context, an overview of the study is presented (Section 8.1) and key findings are summarised (Section 8.2) before the contributions are presented (Section 8.3). Then the limitations within which the study was conducted are mentioned (Section 8.4) and finally future research directions are identified (Section 8.5).

## 8.1 Research overview and objectives

As Mantonakis, Whittlesea and Yoon (2008) posited, memory controls all our human behaviour including speech, conceptual knowledge, skilled activities, social interactions and consumer preferences. Thus, the majority of consumer decisions are memory-based on prior experiences (Lynch and Srull 1982). The evolving behavioural, psychological and neuroscientific work classifies human memories into multiple memory systems where episodic and semantic memories are predominant and this has important relevance for consumer behaviour. In particular, episodic autobiographical memories (AM) have been found to have a profound impact on human behaviour due to their affective, self-relevance qualities. Yet, studies in consumer memories and brand choices

are more focused on semantic memories (Noel 2006; Warlop, Ratneshwar and Osselaer 2005; Shipro and Spence 2002; Nordhielm 2002) than episodic autobiographical memories (Braun-Latour Latour and Zinkhan 2007; Sujan, Bettman and Baumgartner 1993). However, when products and brands are more associated with AM, consumer's behaviour and future brand decisions are guided by their feelings and re-experiencing the original episode through vividness, leading to continuous calls for research on emotional brand relationships (MSI 2008; Reed 2004, Fournier 1998). Thus, the study was designed around two main objectives.

1. To conceptualise whether and how brands are stored and retrieved from autobiographical and semantic memory, and whether the psychological and physiological differentiation of these brand memory systems can be validated.
2. To conceptualise and validate the nomological network of relationships between BRAM, BRSM, self-brand congruence and affective brand commitment.

## 8.2 Key findings of the study

The results of the study present a number of important insights into consumer brand memories as discussed in detail in the last chapter. Key findings are summarised as follows:

1. Physiologically and psychologically brand-related memories are retained in AM or SM.
2. Physiologically BRAM are self-related and emotional in comparison to BRSM.

3. Although BRAM consists of Specificity, Affect and Vividness, based on the nomological validity, Specificity is considered as a separate construct that has more impact on self-brand congruence (SBC) than BRSM.
4. Two BRAM dimensions: Vividness and Affect enhance affective brand commitment (AFBC) in comparison to BRSM.

## 8.3 Main contributions of the study

This section presents theoretical and managerial contributions discovered in the study. Theoretically, the study enhances our understanding of consumer behaviour related to brand-memories and decision-making. Managerially, the project could result in a tangible impact on the way brands are marketed, benefiting marketing practice in three ways, and they are discussed below.

1. The importance of multiple memory systems in understanding consumers and their decision making

As discussed in the Conceptual Review (Chapter 3, Section 3.1), psychological and neurological literature has clearly demonstrated the importance of multiple systems of memory and its influence on human behaviour. This is mainly due to various levels of intensity of information storage, processing and retrieval associated with different memory systems. As a result, extent of information available for decision- making varies with the information retrieved from each memory system. In addition to the consumer memory studies focussed on semantic, implicit and explicit memories, this study reinforces the importance of multiple memory systems in consumer research by investigating AM in relation to brand consumption experiences despite the few studies that reflected on the importance of AM in consumer behaviour (Braun- Latour et al. 2004; Sujan,

Bettman and Baumgartner 1993; Baumgartner, Sujan and Bettman 1992). It is clear from the results that the concept of BRAM (through two dimensions:Affect and Vividness) has more influence on brand commitment decisions than BRSM. This brings the attention and focus to AM investigations in consumption related behaviour.

2. Manifestation of BRAM contributes towards rational and emotional decision making models

Cognitive-rational decision making has long been established and dominated in decision- making models while emotional based decisions are gaining importance in consumption, brand relationships and decision-making (Marketing Science Institute 2010; Reed 2004). From the memory perspective, findings of BRAM investigation have direct implications because Affect and Vividness factors of BRAM impact on brand commitment decisions, whereas no such relationships has been discovered for BRSM. In addition, the construct of Specificity associated with brand experiences is influential towards cognitive decisions. Thus, from the memory perspective, autobiographical referencing plays an important role in the emotional decision-making process. In BRAM, essentially information is stored as affect-laden episodes connecting to specific situations, which may result in hedonic brand choices over rational evaluations.

3. Identify the importance of BRAM in self-brand congruence theory

Self-brand congruence theory is essentially a key influential theory in understanding consumer brand behaviour. The match between one's self concept and brand characteristics creates important implications in consumption behaviour, and by investigating the consequences of memory towards self-brand

congruence further enhances our understanding of memory and its influences on the congruence theory. Specificity or contextual details in memory have a strong influence on congruence theory in comparison to BRSM, which is free from contextual information. This result explains the importance and influence of contextual details in memory towards the self-congruence theory.

AM is a discrete self-defining memory system that performs key social functions of relationship development and maintenance, and therefore essentially facilitates the consumer socialisation process. This is significantly important in the materialistic society, as brands act as self-expressive symbols and therefore AM-associated brand memories inevitably influence everyday consumption decision-making processes of consumers more than other types of memories such as BRSM. However, based on the normological validity, Specificity of brand memories is considered as a separate construct and has implications towards self-brand congruence, which is an important aspect of understanding consumer behaviour.

4. Understand the impact of BRAM on brand commitment decisions

BRAM consists of self-related, personal lifetime memories that are affect- laden at the time of recall. Because of the life significance and affect associated with such brand memories, a strong emotional commitment has been evidenced for those brands, whereas such commitment was not noticed through BRSM, explaining that Vividness and Affect associated brand memories have a high propensity for commitment decisions. Thus, the study explains the theoretical importance of BRAM in decision making including brand commitment over BRSM. BRAM have stronger behavioural implications in information processing and

brand choice in comparison to the abstract brand knowledge that exists in BRSM. These findings provide a deeper insight as to why consumers respond in different ways to the same brand, because how they perceive their brand experience influences their future brand choice.

5. New methodological perspectives to study consumer memories

Neuromarketing or consumer neuroscience has been a topic of interest and controversy during the past two decades both among professionals and academics in marketing because, on the one hand neuroimaging techniques have paved the way towards obtaining more rigorous and objective results compared to the self-report measures with social desirability bias. Yet, on the other hand, neuroimaging has encountered ethical issues in professional conduct. However, this study demonstrates the use of neuroimaging studies as a complementary method to study consumer memories with other traditional methodologies. In particular, fMRI studies can be useful and may have implications towards the methodological perspectives in consumer research. As demonstrated through the experiment, fMRI can be used as a complementary objective measurement to investigate consumer research issues particularly related to memories, information processing, emotions and measuring communication effectiveness, because verbal responses may be subject to cognitive bias and may only reflect the surface level of consciousness related to complex issues in information processing towards different marketing stimuli.

6. Helps to understand how AM structure consumption decisions

Consumption is one way of defining how our society is constructed (Usher, Bryant, and Johnston 1997) and consumer learning through purchase behaviour

is explicit in this social process. As Hutchinson and Alba (1991) emphasised, the importance of quality and quantity of these consumption experiences provide a deeper understanding of the role an individual tends to develops over a long period of time with their brands. Viewing marketing through a consumption lens of experiences provides implications for research and practice in marketing, as AM studies help us to see the ways in which consumption helps structure our everyday lived experiences.

7. Provides an additional measurement in advertising and communication effectiveness

The nature of consumer experience has been an area of interest to advertising researchers because of the dynamic challenges faced by advertising and marketing communications in the current market place. Although consumption memories through experiences can be reconstructed, consumers trust their experiences more within their decision-making (Hoch 2002) than other external communications. In this context, the general approach used to measure advertising effectiveness is by the use of recall or recognition tests. These tests seek to measure the top of mind brand awareness, brand familiarity or recognition of the contents of the advertisement. Based on the results of the study, consumers are more committed and attached to vivid and affect-associated brands than the brand awareness and abstract image characteristics of the brand. It is therefore important to measure the impact of BRAM (i.e. Vividness and Affect) associated with such advertisements to obtain the real impact of such advertising campaigns in influencing consumers' future brand decisions and responses.

The study has primary relevance towards measuring advertising effectiveness through the BRAM scale developed in the study in addition to recall and recognition tests that usually measure consumer ability to identify brand names and contents in advertisements. Consumers may have a high recall rate for a brand, not necessarily because of the effectiveness of the advertisement, but maybe due to the autobiographical relevance and importance placed on the brand. In such circumstances, recall test scores will not reflect an accurate picture, and the BRAM scale can be utilised as a complementary measure in testing advertising effectiveness.

8. New product development tests

The study demonstrates the use of fMRI as a complementary objective measurement instrument compared to common market research techniques in investigating consumer preferences, as verbal responses may be subject to cognitive bias and social desirability. This knowledge can help marketers to create better and more competitive products, design effective services, and focus marketing campaigns that enhance the communication process.

A consumer need and the situation in which it occurs may serve as a retrieval cue. Thus, in testing the effectiveness of new product concepts or advertising executions, learning from personal experiences must be accounted not as something independent of marketing action, but as a process, that marketing has the power to leverage in building brand attitudes and brand commitment. Before spending large budgets on test marketing campaigns when products are on the shelf, techniques such as fMRI can be used more effectively to test consumer response to brand/advertising concepts at a much lower budget

before they can go wrong in test marketing campaigns. In addition, the study highlights the importance of evaluating advertising effectiveness on advertisement's perceptual and affective information in addition to the brand knowledge as these factors may have a strong influence towards brand recognition, recall and future purchase.

9. Highlight the importance of autobiographical significance in creative strategy

It is important to understand the consumer-learning process as a series of highly accessible personal memories about brand usage situations as it may be relevant in managing brand communication strategies effectively. Understanding the context for recollecting and processing brand information may have a potential value in designing advertising strategies for cueing consumer personal experiences for increased persuasion.

The credibility of self-directed learning and the vividness of personal experiences can be considered a powerful tool in a winning branding strategy. In other words, marketers can manage their branding strategies by understanding the consumer learning process more effectively. Accessibility and understanding the cues for memory retrieval are important issues for marketing communications decisions and can play a crucial role in brand-positioning strategies. If consumers have highly accessible associative memories about brand usage situations or high vividness about a brand-related event, designing positioning programme to recreate this memory may be very relevant. In these situations, using message structure and design factors to influence consumer information processing at encoding may be useful as these factors may establish the

accessibility of brand associations. Situational cues surrounding the use of brands needs to be defined carefully and may include these as information inputs in designing an appropriate message content in marketing communications for better results. Although this study does not directly show findings relevant to this, it highlights the importance of attention to this area by investigating BRAM and such reflections can be embraced from a deeper qualitative investigation and analysis.

## 8.4 Limitations of the study

As discussed in the Methodology chapter (Section 4.1), there are different philosophical paradigms in conducting research, and the researcher has to make a reasonable choice of approach with relevant assumptions. In this study, a scientific positivist approach was chosen instead of a phenomenological approach. Within the selected approach, limitations relevant to each empirical method were acknowledged in the Methodology chapter under each method section (Sections 4.3.7, 4.4.11 and 4.5.11).The main limitations of the overall study are discussed below in detail.

1. One of the main contributions of the study is the application of AM in comparison to SM in brand consumption situations and its implications. Although physiologically AM and SM are separated based on different functions of the brain, when these different memory systems are activated, they interact with each other to perform a certain task and thus a perfect disassociation cannot be seen. In addition, it is difficult to truly separate where the autobiographical memory and other forms of explicit memories begin and end, as they are separate systems but are cohesively connected.

Despite this connectedness, autobiographical memory has differing functions from other forms of memory and is located in different parts of the brain. This was a main limitation in recalling brand memories from AM or SM.

2. The study developed a theory of BRAM (Affect and Vividness) and Specificity that work together in influencing self-brand congruence and brand commitment through a multi-disciplinary literature review. Although the theory was supported through empirical results, the theoretical justification is still in a preliminary stage and needs further work to enhance the validity and rigor.

3. The use of purposive sampling, which is a non-random sampling method, often limits the generalisability of the results. However, a justification was made with respect to the demographic representation of the sample to the population characteristics. Yet, participation of students and staff in a university in the West Midlands and North East dominated in the sample size and this may restrict the generalisability of the theory to all geographical regions in the UK.

4. Extant studies in self-image theory has investigated different aspects of self-image namely actual self, ideal self and social self (Kressmann et al. 2006; Sirgy 1982). When consumers attempt to evaluate a single brand by matching the brand-user image or so called 'symbolic attributes' of the brand with their self-concept, ideally these different aspects of self would be considered at different levels of strength and intensity. In the study, these different aspects of self have not been accounted in conceptualising self-

image congruence to avoid complexity in the analysis due to the diversity of brands in different product categories.

5. The main focus of the study is on memories and autobiographical memories in particular. These lifetime memories span from early childhood memories to recent adult memories. Because the memory capacity of each individual is different, participants may not be in a position to recall all their significant lifetime memories in a consistent manner. Although no participant complained or commented on this difficulty, there is a probability that this would have affected some elderly participants in the study.

6. The study focused mainly on the positive BRAM and BRSM rather than considering negative memories in investigating relationships between other constructs. Primarily, this is to avoid conceptual and analytical complexities in the study.

## 8.5 Future directions

In the study area, a few interesting areas have been uncovered for future research, and they are discussed below.

1. It was noticed from the empirical results that BRAM are more related to certain product categories (for example gift items such as perfumes, wrist watches etc). This evidence also confirms Micu and Coulter's (2007) view that consumer responses to advertising, trial and purchase depend on the product category (Micu and Coulter 2007). Thus, it may be possible to investigate

differences between BRAM's influence towards hedonic and utilitarian product categories.

2. Recent research explains that adults engage children in a process of co-constructing memories and guide them to produce verbal accounts of their experiences. In this scenario, it has been suggested that cultures may differ in the amount and content of these interactions between children and adults (Mullen and Yi 1995). Thus, investigation of BRAM in different cultural settings may produce valuable insights as to whether BRAM and its behavioural implications vary across cultures.

3. Brands play a major role in satisfying social needs in a materialised consumer society and BRAM may be subject to social influences from reference groups when accomplishing social functions. In situations where consumers are more susceptible to interpersonal influences (Bearden, Netemeyer and Teel 1989; Netemeyer, Bearden and Teel 1992), BRAM may play a major role and it may be worth investigating this phenomenon in future research studies.

4. Although the study has investigated the relationship between BRAM and brand commitment, there are a few other important constructs such as brand attitude, brand trust, brand involvement that significantly influence one's future brand decisions, and it is important to investigate the relevance and importance of BRAM and BRSM towards those concepts to enhance the validity and understanding of BRAM in consumer research.

## 8.6 Conclusion

The study found an important research gap related to brand memories through an interdisciplinary literature review and investigated how BRAM (Specificity, Affect and Vividness) influences self-brand congruence theory and affective brand commitment in comparison to the concept of BRSM. The methodological triangulation was followed by implementing and analysing three data collection strategies: qualitative interviews, fMRI experiments and the survey.

Findings evidenced that Specificity influences self-brand congruence relationship while Vividness and Affect dimensions of BRAM influence affective brand commitment, whereas no such relationship was evidenced in BRSM. These findings have important implications for understanding consumer brand memories towards their decision-making and providing a complementary measure in evaluating advertising effectiveness.

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# APPENDICES

# Appendix 4.1: Qualitative interview guideline

Participants are encouraged to retrieve at least three brand- related personal memories from childhood, early adult life and recent past.

**PART 1**

***Brand- Related Autobiographical Memory (BRAM)***

1. Think about your strongest memories when you were a child or a teenager (5 – 18 years)
   Can you remember one or more of these related to different objects such as toys, clothes, food, home, garden, gifts, birthday parties, holidays, school, vehicles, etc.
2. Are there any particular brands you remember from your childhood?
3. Describe your memories related to this brand as you remember.
4. Is it important to you and why?
5. Can you imagine this memory event? What comes to your mind?
6. How do you feel when you recall this brand-related memory?
7. Can you think of any of your personal memories you remember during your early adult life or recent past?
   *Prompts*
   *These memories can be related to your;*
   - *College or university, where stayed, friends, activities, trips.*
   - *Family members (i.e. parents, brothers or sisters) and any events connected with them.*
   - *First job, recent job, work place, friends at work, profession.*
   - *Meeting someone during 20's, your wedding, someone else's wedding.*
   - *Objects or possessions such as clothing, food, vehicles, things bought for home, gifts*
   - *Visits for business, entertainment and to friends, relatives.*
   - *Events such as birthday parties, dinners, holidays, entertainment, shopping, week end activities*
8. Repeat question 2-6.

**PART 2**

9. What benefits or values did you receive from this brand?
10. How do you describe this brand (brand characteristics)?
11. Are these brands important to you now?
12. Do you buy them now?
13. Will you be buying them in the future?

**PART 3**

14. Can you remember any of your personal memories related to these brands[2]?

I. Fray Bentos pies
II. Bird's custard powder
III. Heinz baked beans
IV. Coca Cola
V. BMW cars
VI. Volkswagen cars
VII. Ford cars
VIII. John Levis jeans
IX. Chanel cosmetics
X. Sony television
XI. Nike shoes
XII. Colgate toothpaste
XIII. Persil washing powder
XIV. HP sauce
XV. Oil of Ulay/Olay
XVI. Lucozade

15. Continue from question 3-6 and 9-13.

# Appendix 4.2: FMRI pre-scanning questionnaire

**Participant's reference code: ……..**

**Part 1**

1. Thinking about your 'life time memories' (i.e. those personal, specific events about yourself that you can recall from the past) do you have any brands associated with these memories? An example of an autobiographical memory is quoted below for more clarity;

   *"For my 18th Birthday, I got my first designer bag. This was a gift from my dad. It came through the post in the morning. He didn't hand it over to me because he was away. I got the delivery in the morning, I saw this big box, I was thinking, what's in this and then I tried to open it but I couldn't. I just took a knife and opened it. Then I saw the designer bag, it was a Gucci, and I was really excited! It was blue, gold and black leather, felt great and I remember being on a real high!"*

   Your lifetime memories may be related to any of the following situations. You may well have other examples which you are encouraged to detail.

   - *Playing with friends in childhood days.*
   - *Participating in a school concert or sports day.*
   - *Winning a competition or a sports event.*
   - *Relating to a shopping experience.*
   - *Receiving a birthday gift or Christmas gift.*
   - *General events such as dining with family.*
   - *Holiday memories.*
   - *First day at senior school, university or first job.*
   - *Relates to special occasions such as weddings, graduations etc.*
   - *Any disappointing incident.*

Yes ☐

No ☐

If 'Yes' please continue to question no. 2. If 'no' please end the survey and thank you very much for your time.

2. Thinking about these lifetime memories that include a brand in them, (*as in example quoted in question 1*) please detail these below. Please write the brand name that came first to mind when thinking about your lifetime memories.

| **Rank** | **Brand Name** | **Memory Description (in one sentence)** |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |

3. Of the brands and brand-related memories detailed above, please answer the following questions considering one brand at a time after writing down each brand name on the space given.

*Please use the following scale to answer the subsequent statements.*

*Strongly Disagree* **1** *Disagree* **2** *No opinion* **3** *Agree* **4** *Strongly Agree* **5**

**For example; If you select 2 as the answer, please fill in black colour in the relevant cage:-** 1 **2** 3 4 5

| | *Please write down brand names* | Brand 1 …….. | | | | | Brand 2 ……. | | | | | Brand 3 ……. | | | | | Brand 4 …… | | | | | Brand 5 ……. | | | | | Brand 6 …… | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | While remembering the brand memory, I feel that I travelled back to the time when it happened. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 2. | As I think about the event, I can actually remember it rather than just knowing that it happened. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 3. | I can remember the detailed story of what happened in this memory event. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 4. | While remembering the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 5. | While remembering the event, I feel the same particular emotions I felt at the time of the event. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 6. | The emotions that I feel are extremely intense about this memory. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 7. | Because of this event, this brand is sentimental to me. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 8. | This brand- related memory is worth remembering. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 9. | I have a strong interest in this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 10 | I attach great importance to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 11 | My knowledge about this brand is very strong. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

| | *Please write down brand names* | Brand 1 …….. | | | | | Brand 2 ……. | | | | | Brand 3 ……. | | | | | Brand 4 …… | | | | | Brand 5 ……. | | | | | Brand 6 …… | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | I have known about this brand for many years. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 13 | I know what the key features of the brand are. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 14 | I know what the brand image is. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 15 | I like this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 16 | This is a good brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 17 | This is my favourite brand in the product category. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 18 | I would recommend this brand to others in the future. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 19 | I am committed to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 20 | Over the years, I have bought this same brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 21 | I am really attached to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 22 | I always buy this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 23 | I will continue purchasing this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 24 | The next time I buy a product from this category, it will be this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

**Part 2**

4. For the product categories detailed below, do you have any 'life-time' personal memories? If 'yes', please write down the brand names under each product category. If 'no' please go to question 6.

| | **Product Category** | **Brand Name** | **Memory Description (in one sentence)** |
|---|---|---|---|
| 1. | Cars | 1. …… | |
| | | 2. …… | |
| 2. | Clothing | 3. …… | |
| | | 4. …… | |

| | | | |
|---|---|---|---|
| 3. | Personal Care | 5. …… | |
| | | 6. …… | |

5. Of the brands and brand-related memories detailed above, please answer the following questions considering one brand at a time after writing down each brand name on the space given.

*Please use the following scale to answer the subsequent statements.*

*Strongly Disagree* *Disagree* *No opinion* *Agree* *Strongly Agree*

**1** **2** **3** **4** **5**

**For example; If you select 2 as the answer, please fill in black colour in the relevant cage:-** 1 **2** 3 4 5

| | *Please write down brand names* | Car Brand 1 …….. | | | | | Car Brand 2 …….. | | | | | Clothing Brand 1 …….. | | | | | Clothing Brand 2 …….. | | | | | Personal Care Brand 1 …….. | | | | | Personal Care Brand 2 …….. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | While remembering the brand memory, I feel that I travelled back to the time when it happened. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 2. | As I think about the event, I can actually remember it rather than just knowing that it happened. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 3. | I can remember the detailed story of what happened in this memory event. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 4. | While remembering the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 5. | While remembering the event, I feel the same particular emotions I felt at the time of the event. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 6. | The emotions that I feel are extremely intense about this memory. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 7. | Because of this event, this brand is sentimental to me. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8. | This brand- related memory is worth remembering. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 9. | I have a strong interest in this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 10. | I attach great importance to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 11. | My knowledge about this brand is very strong. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 12. | I have known about this brand for many years. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 13. | I know what the key features of the brand are. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 14. | I know what the brand image is. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 15. | I like this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 16. | This is a good brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 17. | This is my favourite brand in the product category. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 18. | I would recommend this brand to others in the future. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 19. | I am committed to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 20. | Over the years, I have bought this same brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 21. | I am really attached to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 22. | I always buy this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 23. | I will continue purchasing this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 24. | The next time I buy a product from this category, it will be this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

## PART 3

6. Do you have any life time memories related to the following brands? Please circle 'yes' or 'no' accordingly.

| | **Product Category** | **Brand** | | |
|---|---|---|---|---|
| 1. | Cars | Toyota | Yes | No |
| | | Mercedes-Benz | Yes | No |
| 2. | Clothing | Louis Vuitton | Yes | No |
| | | Gucci | Yes | No |
| 3. | Personal Care | L'Oreal | Yes | No |
| | | Colgate | Yes | No |

7. Of the brands mentioned above, please answer following questions considering one brand at a time after writing down each brand name on the space given.

*Please use the following scale to answer the subsequent statements.*

*Strongly Disagree* **1** *Disagree* **2** *No opinion* **3** *Agree* **4** *Strongly Agree* **5**

**For example; If you select 2 as the answer, please fill in black colour in the relevant cage:-** 1 **2** 3 4 5

| | | **Toyota** | | | | | **Mercedes-Benz** | | | | | **Louis Vuitton** | | | | | **Gucci** | | | | | **L'Oreal** | | | | | **Colgate** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | I have a strong interest in this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 2. | I attach great importance to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 3. | My knowledge about this brand is very strong. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 4. | I have known about this brand for many years. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 5. | I know what the key features of the brand are. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 6. | I know what the brand image is. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 7. | I like this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 8. | This is a good brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

| | | **Toyota** | | | | | **Mercedes-Benz** | | | | | **Louis Vuitton** | | | | | **Gucci** | | | | | **L'Oreal** | | | | | **Colgate** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9. | This is my favourite brand in the product category. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 10. | I would recommend this brand to others in the future. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 11. | I am committed to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 12. | Over the years, I have bought this same brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 13. | I am really attached to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 14. | I always buy this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 15. | I will continue purchasing this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 16. | The next time I buy a product from this category, it will be this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

**PART 4**

8. The following are 6 brands from three product categories. Please provide your answers to the statements provided below;

| | **Product Category** | **Brand Name** |
|---|---|---|
| 1. | Cars | Lada |
| | | Kalina |
| 2. | Clothing | Hosachi |
| | | Fashion Bug |
| 3. | Personal Care | Venus |
| | | Premier |

*Please use the following scale to answer the subsequent statements. For example;*

*Strongly Disagree* **1** *Disagree* **2** *No opinion* **3** *Agree* **4** *Strongly Agree* **5**

**For example; If you select 2 as the answer, please fill in black colour in the relevant cage:-** 1 **2** 3 4 5

| | | **Lada** | | | | | **Kalina** | | | | | **Hosachi** | | | | | **Fashion Bug** | | | | | **Venus** | | | | | **Premier** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | I have a strong interest in this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 2. | I attach great importance to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 3. | My knowledge about this brand is very strong. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 4. | I have known about this brand for many years. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 5. | I know what the key features of the brand are. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 6. | I know what the brand image is. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 7. | I like this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 8. | This is a good brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 9. | This is my favourite brand in the product category. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 10 | I would recommend this brand to others in the future. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 11 | I am committed to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 12 | Over the years, I have bought this same brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 13 | I am really attached to this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 14 | I always buy this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 15 | I will continue purchasing this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 16 | The next time I buy a product from this category, it will be this brand. | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

# Appendix 4.3: Scale items used in the pre-scanning questionnaire

| Item | Items used in the questionnaire | Reference | Original Item |
|---|---|---|---|
| **BRAM** | | | |
| 1. | While remembering the brand memory, I feel that I travelled back to the time when it happened. | Belief and Recollection of Autobiographical Memories : Rubin, Schrauf and Greenburg 2003 | As I remember the event, I feel that I travel back to the time when it happened, that I am a a subject in it again , rather than an outside observer tied to the present |
| 2. | As I think about the event, I can actually remember it rather than just knowing that it happened. | | Sometimes people know something happened to them without being able to actually remember it. As I think about the event, I can actually remember it rather than just knowing that it happened. |
| 4. | While remembering the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | | As I remember the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. |
| 3. | I can remember the detailed story of what happened in this memory event. | AM Interview : Kopelman, Wilson and Baddeley 1989 | Detailed story |

| | | | |
|---|---|---|---|
| 5. | While remembering the event, I feel the same particular emotions I felt at the time of the event. | Emotional Intensity predicts autobiographical memory experience: Talarico, LaBar and Rubin 2004 | While remembering the event, I feel the emotions as strongly as I did then |
| 6. | The emotions that I feel are extremely intense about this memory. | | The emotions that I feel are extremely intense. |
| 7. | Because of this event, this brand is sentimental to me. | Measuring Emotions in the Consumption Experience: Richins 1997 | Sentimental |
| 8. | This brand- related memory is worth remembering. | The Impact of Feelings on Ad-Based Affect and Cognition :Burke and Edell 1989 | Worth remembering |
| **Enduring brand involvement** | | | |
| 9. | I have a strong interest in this brand. | Broderick 2007 | I have a strong interest in this brand. |
| 10. | I attach great importance to this brand. | Cronbach's alpha – 0.82 | I attach great importance to this brand. |
| **Brand Knowledge** | | | |
| 11. | My knowledge about this brand is very strong. | Smith and Park 1992 | I feel very knowledgeable about this product. |
| 12. | I have known about this brand for many years. | Cronbach's alpha - 0.80 | If a friend asked me about this product, I could give them advice. |
| 13. | I know what the key features of the brand are. | | |
| 14. | I know what the brand image is. | Kent and Allen 1994 Cronbach's alpha – 0.85 | If I had to purchase this product today, 1 would need to gather very little information in order to make a wise decision. |
| | | | I feel very confident about my ability to tell the difference in quality of this product. |
| | | | Regarding the product , are you, |

| | | | |
|---|---|---|---|
| | | | Familiar/unfamiliar<br>Inexperienced/experienced,<br>Knowledgeable/not knowledgeable |
| **Brand Attitude** | | | |
| 15. | I like this brand. | Mitchell and Olson 1981<br>Cronbatch Alpha 0.85 | Brand Attitude<br>Good - bad<br>Like - dislike<br>Favourable – Unfavourable |
| 16. | This is a good brand. | | |
| 17. | This is my favourite brand in the product category. | | |
| **Brand Commitment** | | | |
| 18. | I would recommend this brand to others in the future. | Evanschitzky et al 2006<br>Cronbach's alpha 0.75 | I would recommend the brand in the future. |
| 20. | Over the years, I have bought this same brand. | | I bought the same brand for the past 12 months |
| 21. | I am really attached to this brand. | | I feel emotionally attached to the brand. |
| 19. | I am committed to this brand. | Coulter, Price and Feick 2003: Broderick 2007<br>Cronbach's alpha 0.92 | I am committed to this brand. |
| **Purchase Intention** | | | |
| 22. | I always buy this brand. | Chiou, Huang and Chuang 2005<br>Cronbach's alpha 0.86 | 1. I will (continue to) purchase F4's new CD album when it is available.<br>2. To me, (continuing to) purchase F4's CD album is the best choice.<br>3. I consider myself a loyal customer of F4's CD album. |
| 23. | I will continue purchasing this brand. | | |
| 24. | The next time I buy a product from this category, it will be this brand. | | |

# Appendix 4.4: FMRI - invitation email

Dear …….. (first name),

A collaborative, inter-disciplinary research project has been initiated between Prof. Amanda Broderick (Business School), Dr. Rachel Mitchell (Psychology) and Nilanthi Ratnayake (Doctoral Researcher) to investigate how the brain processes and stores brand memories. We would like to invite you to participate in this study.

This study will use functional magnetic resonance imaging (fMRI), a completely harmless and non-invasive type of brain scanning that will be performed at the Newcastle MR Centre.

An overview of the study is as follows;
Stage 1: Recruitment: We will seek your informed consent to participate.
Stage 2: Pre-screening Survey: You will be asked to complete an advance questionnaire on your brand memories.
Stage3: Conduct fMRI Test: You will view a series of 24 brand names whilst data on the pattern of activity in your brain is captured, and a detailed structural scan of the anatomy of your brain is performed.

The estimated total length of stage 3 is 45 minutes.

As an incentive for participating in the study, you will be awarded a £20 voucher and an image of your brain. Please note that we will also pay/reimburse your travelling expenses from Durham University to Newcastle MR Centre.

If you are interested in taking part, we will send you two documents. The safety questionnaire needs to be filled in if you are interested in participating in the study and the MR information leaflet provides information related to the brain scanning. All information collected for the study will be kept confidential and anonymous, and at no point will you be identified in the analysis.

We would very much appreciate your participation in the study. If you are happy to participate, please get in touch by May 7th to let me know.

We hope to complete the data collection phase in the next few months.

If you have questions, please do not hesitate to contact me on
078 4556 1149 or nilanthi324@hotmail.co.uk

You can also contact my supervisors on amanda.broderick@dur.ac.uk or
r.l.c.mitchell@dur.ac.uk

We look forward to hearing from you.

Thank you,

The Research Team

# Appendix 4.5: FMRI – volunteer safety questionnaire

| | | | |
|---|---|---|---|
| 1. | Volunteer's name with initials | : | |
| 2. | Date of birth | : | |
| 3. | Subject Group | : | |
| 4. | Subject Number | : | |
| 5. | Study Name | : | Physiological Manifestations of Brand Memory |
| 6. | Gender | : | |
| 7. | Occupation | : | |
| 8. | 1st Language | : | |
| 9. | Address | : | |
| 10. | Contact Number | : | |
| 11. | Weekly alcohol consumption | : | |
| 12. | Number of years education | : | |
| 13. | Current medication | : | |
| 14. | GP Name and address | : | |
| 15. | Handedness | : | |
| 16. | Weight | : | |
| 17. | Height | : | |

**Please check the following carefully and circle 'yes' or 'no'. Some items can interfere with MR examinations, and may also be hazardous to your safety.**

| | | |
|---|---|---|
| Have you had any surgery? | **Yes** | **No** |
| Have you had any operations/procedures involving your **head, chest or heart**? | **Yes** | **No** |

**Do you have any of the following?**

| | | |
|---|---|---|
| **Cardiac pacemaker, aneurysm clip, stent, heart valve replacement, cochlear implant, programmable shunt, spinal stimulation wires, or any other implants.** | **Yes** | **No** |

| | | |
|---|---|---|
| Is there any possibility that you could have metal fragments in your eye? | **Yes** | **No** |
| Do you have any metal fragments anywhere in your body? | **Yes** | **No** |

**Are you wearing?**

| | | |
|---|---|---|
| Dentures with metal | **Yes** | **No** |
| A hearing aid | **Yes** | **No** |
| Body piercing/jewellery/hair grips | **Yes** | **No** |
| Slow-release drug patches on your skin | **Yes** | **No** |
| Do you have any tattoos? | **Yes** | **No** |
| Do you have epilepsy or have you ever had any fits? | **Yes** | **No** |
| Are you colour blind? | **Yes** | **No** |
| Do you have any vision/hearing difficulties? | **Yes** | **No** |
| Do you have a history of abusing drugs or alcohol (including cannabis)? | **Yes** | **No** |
| Do you have diabetes or any other type of thermoregulatory disorder? | **Yes** | **No** |
| Do you have a history of any neurological disorder? | **Yes** | **No** |
| Do you have a history of any psychological illness (including depression)? | **Yes** | **No** |
| Have you ever had any head injuries or long periods of unconsciousness for which you required hospital treatment? | **Yes** | **No** |
| *FOR WOMEN OF CHILDBEARING AGE:* Could you be pregnant? | **Yes** | **No** |

**Please note that ALL metal worn or carried on your person must be removed at the MRI examination.**

# Appendix 4.6: FMRI – participant consent form

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**TITLE OF PROJECT: BRAND REPRESENTATION IN AUTOBIOGRAPHICAL MEMORY**

(The participant should complete the whole of this sheet himself/herself)

*Please cross out as necessary*

1. Have you read the Participant Information Sheet? YES / NO
2. Have you had an opportunity to ask questions and to discuss the study? YES / NO
3. Have you received satisfactory answers to all of your questions? YES / NO
4. Have you received enough information about the study and the

   Intended uses of, and access arrangements to, any data which you supply? YES / NO
5. Were you given enough time to consider whether you want to participate? YES / NO
6. Who have you spoken to? Or had correspondence with?

   Dr/Mr/Mrs/Ms/Prof.....
7. Do you consent to participate in the study? YES / NO
8. Do you understand that you are free to withdraw from the study: YES / NO

   * at any time and

   * without having to give a reason for withdrawing and

   * without any adverse result of any kind?

**Signed** ..... **Date** .....
(NAME IN BLOCK LETTERS) .....

**Signature of witness** ..... **Date** .....
(NAME IN BLOCK LETTERS)
.....

# Appendix 4.7: FMRI -volunteer appointment booking form

# Appendix 4.8: FMRI – information leaflet and appointment details

## WHAT IS MAGNETIC RESONANCE?

Magnetic Resonance is a normal property of the tissues of the body. Magnetic Resonance Imaging (MRI) allows the production highly detailed images of your body and Magnetic Resonance Spectroscopy can give information about the exact composition of the tissues of your body. Magnetic resonance techniques do not use x-rays or any other harmful radiation, but the operation of the scanner can be noisy.

## HOW DOES MAGNETIC RESONANCE WORK?

The MR scanner uses a very large static magnetic field, 3 Tesla, smaller changeable magnetic fields and pulses of radiowaves to image the hydrogen atoms distributed throughout our bodies. The scanner can very easily differentiate between different types of tissues as the hydrogen atoms within these tissues behave differently in the magnetic field.

## WHAT MUST I DO IN PREPARATION FOR MY SCAN?

Depending on the type of study you are involved with, you may be given specific preparation instructions, but otherwise you should eat and drink normally before the scan. If possible, please wear clothes without any metal clips or zip fasteners, but if this is a problem for you do not worry, as we can provide gowns and changing facilities with safety lockers for your valuables. If you are having a scan of your head please do not wear any eye makeup.

## IS THERE ANYTHING TO PREVENT ME FROM HAVING A SCAN?

An MR Scan will not be possible if you have a cardiac pacemaker or any other metallic or programmable implant. These may include cochlear implants, surgical clips used on blood vessels in the brain, bio stimulators, shrapnel, and some heart valves.

As a precaution we do not perform MR scans on any ladies who are, or might be, in the early stages of pregnancy.

If you have any questions or concerns about your scan please do not hesitate to contact the person who arranged the scan as part of your investigation or research study. If for any reason you cannot contact this person, telephone NMRC on 0191 2481150.

## WHAT HAPPENS WHEN I COME FOR MY SCAN?

When you arrive at the main door of the Newcastle MR Centre (see map overleaf) you should ring the bell. The receptionist will let you in and ask you to wait in the waiting area. The radiographer

will then check your details, explain the procedure and also do a safety check. Please feel free to ask any questions you wish.

Once you are ready for the scan, you will be accurately positioned in the scanner and made comfortable. As the MR scanner can be noisy you will be asked to wear protective headphones during the scan, through which it is possible to listen to music and to communicate with the radiographer performing your scan. If you wish you can bring along your favourite CD so that you can relax and listen to the music of your choice during the procedure. We will be in constant communication with you for the length of the procedure, so if you need anything at all you just have to ask.

## HOW LONG WILL MY SCAN TAKE?

Scan times vary depending upon the kind of study involved. The doctor or researcher who arranges the scan with you will describe exactly how long the procedure should take.

## HOW DO I GET THERE?

**By Bus:**

Telephone Travel Line 0870 6082608.

Bus 10 and 38 go from Central Station.

Bus 39 and 40 opposite Eldon Square on Blackett Street.

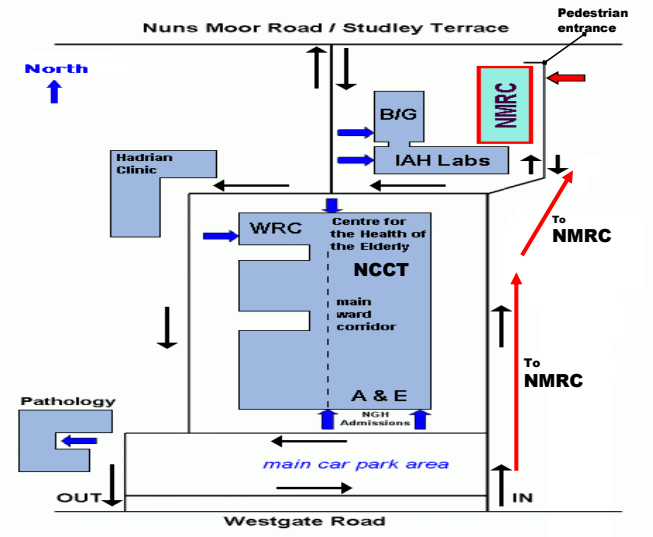
**By Rail:**

Newcastle Central Station – Enquiries 08457 48 49 50

**By Car:**

Newcastle General Hospital is situated on Westgate Road *(A69)* to the west of Newcastle. The easiest way by car is to enter the NGH site from Westgate Road, drive past all the main hospital buildings then take the first right.

There are two reserved car parking places at the main entrance of the MR Centre.



## APPOINTMENT DETAILS

NAME: ……

APPOINTMENT: **……**

If for any reason you are unable to keep your appointment please let us know as soon as possible, or if you have any queries prior to your appointment please contact us at NMRC.

**Newcastle Magnetic Resonance Centre**

**Newcastle University**

**Campus for Ageing and Vitality**

**Newcastle upon Tyne**

**NE4 5PL**

**Telephone: 0191 248 1150**


# NEWCASTLE MR CENTRE

# CAMPUS FOR AGEING AND VITALITY

# Information & Appointment Card

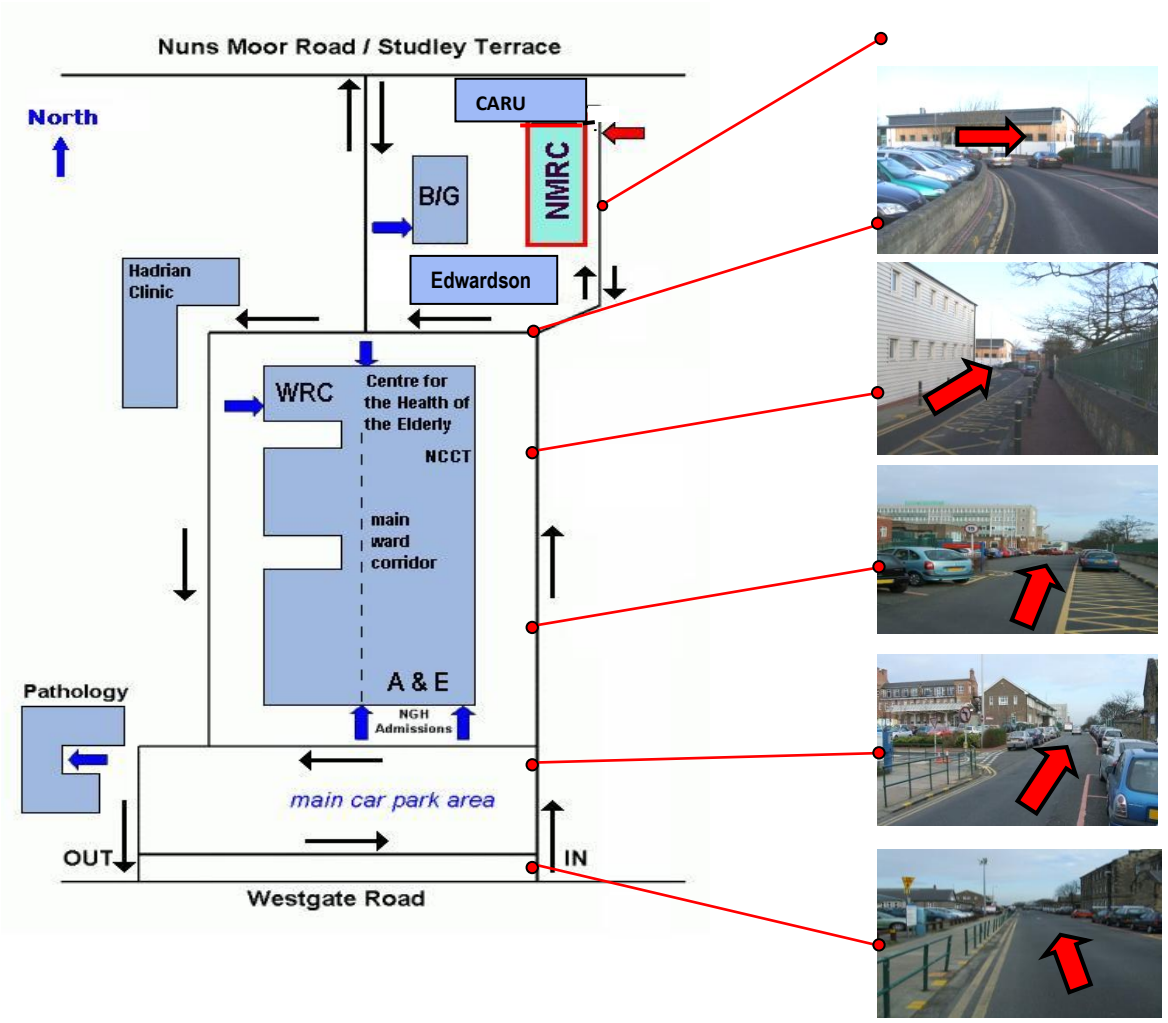
## Directions to Newcastle Magnetic Resonance Centre on the site of Newcastle General Hospital.

On entering Newcastle General Hospital site from Westgate Road, follow the one way system past the Northern Centre for Cancer Treatment (NCCT).

**Turn right** just as the road bends to the left, following the sign "Newcastle Magnetic Resonance Centre".

The Newcastle Magnetic Resonance Centre is the blue building on your left down this narrow road.

NB: If you enter via Nuns Moor Road, it will be necessary to follow the one-way system around the entire NGH site.



# Appendix 4.9: FMRI – prescan information and instructions

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**FMRI Study on Brand Memories – Experiment Instructions (emailed to participants)**

Dear ……,

Many thanks for expressing your consent to participate in the above study and completing all the related materials.

As agreed, your fMRI scan is confirmed on *Thursday, 24th June 2010 at 9.30 am*. In order for the Centre staff to carry out necessary safety checks, you are kindly requested to report to the Newcastle Magnetic Resonance Centre at 9.10 am. I've attached the following documents with regard to the experiment and would appreciate it if you could please read all the documents before arriving to the MR Centre.

1. Instruction leaflet –General and specific information/instructions about the experiment.
2. NMRC appointment letter – This incorporates information sheet regarding your MR scan, and also a map and directions to NMRC.
3. Participant consent form – Please complete this and bring it with you on the day.

Your travel expenses will be reimbursed against receipts and your brain image will be emailed to you after one week of your scan.

If you have any issues, please do not hesitate to contact me via email (nilanthi324@hotmail.co.uk) or 0784556 1149.

I very much appreciate your contribution to this project and look forward to meeting you.

Thanks and regards

Nilanthi

**FMRI STUDY ON BRAND MEMORIES - INSTRUCTIONS TO PARTICIPANTS**

***Before arriving at the Newcastle Magnetic Resonance Centre***

1. We would Appreciate it if you could please read the following documents;
    a. **Instruction leaflet –General and specific instructions about the experiment (i.e. this document).**
    b. **Newcastle Magnetic Resonance Centre (NMRC) appointment letter This incorporates information sheet regarding your MR scan, and also a map and directions to NMRC.**
2. Please come prepared for an MRI scan. If possible wearing no jewellery or any clothing with metal. All other metal, e.g. hair grips, must also be removed. There are changing room with lockers if you prefer to bring alternative clothing to wear for the scan. Your may also bring along a CD to listen to during the scan.
3. Please arrive at the Newcastle University Magnetic Resonance at the time given in your email. The address is Newcastle Magnetic Resonance Centre, Newcastle University, Campus for Ageing and Vitality, Newcastle upon Tyne, NE4 5PL.

***When arrived at the Newcastle Magnetic Resonance Centre,***

4. Please ring the bell. The receptionist will let you in and ask you to wait in the waiting area. The radiographer will then check your details, explain the procedure and also do a safety check. Please feel free to ask any questions you wish.
5. **Prior to the experiment, you will be made familiar with the task outside the scanner if necessary. A written instruction brief related to the task you are expected to perform during the scan is given on page 2. Please read this information to familiarise yourself with the task. If necessary we will brief you on this prior to the experiment.**
6. Once you are ready for the scan, you will be accurately positioned in the scanner and made comfortable.

## Scanning Instructions

Please follow the steps explained below;

1. You will be presented with a series of brand names when you go into the scanner. For each brand, please think about the associations and images you have in your memory that are related to it.
2. When the experiment starts, you will be asked to lay supine in the fMRI scanner. The experiment has already been set up when you go inside the scanner.
3. The experiment will last for 40 minutes. You will need to keep as still as possible. It may be rather noisy during the scan.
4. You will be shown 24 brand names on the scanner bore one after the other in a sequential order.
5. Each brand name will remain on the screen for 15 seconds, and after this time is elapsed, the brand name will disappear from the screen.
6. When you see the brand name, please answer to the following questions;

   "What kind of memory do you primarily have about this brand?

   A.) Life-time personal memory

   B.) The attributes of the product

   C.) No or little memory

   Please use response box to indicate a, b or c.
7. This process will repeat for all 24 brands and you are expected to answer accordingly.
8. Once the experiment is over, you will see the word 'END' on the screen. A staff member will assist you to come out of the scanner.

# Appendix 4.10: Original items used to measure BRAM attributes

## Specificity (Contextual Information)

| Item | Original Item | Reference | Items used in the questionnaire |
|---|---|---|---|
| SPE1 | As I remember the event, I feel that I travel back to the time when it happened, that I am a a subject in it again , rather than an outside observer tied to the present | Belief and Recollection of Autobiographical Memories :<br>Rubin, Schrauf and Greenburg 2003 | 1. I feel that I travelled back to the time when it happened. |
| SPE2 | Sometimes people know something happened to them without being able to actually remember it. As I think about the event, I can actually remember it rather than just knowing that it happened. | Belief and Recollection of Autobiographical Memories :<br>Rubin, Schrauf and Greenburg 2003 | 2. I can actually remember it rather than just knowing that it happened. |
| SPE3 | When (day, time) it happened<br><br>Time (year, month or season, date, day, and time of day) | AM Interview: Kopelman, Wilson and Baddeley 1989<br><br>Dissociating Episodic from Semantic Retrieval: Levine et al 2002 | 3. I can remember the day (eg. Monday, 24th) when this brand memory event happened. |
| SPE4 | When it happened | Dissociating Episodic from Semantic Retrieval : Levine et al 2002 Qualitative Interviews | 4. I can remember my age when this brand memory happened. |
| SPE5 | Where (place) it happened<br><br>Locations<br><br>Place (country, state/province, city, street, address, building, room within building, location within room) | AM Interview : Kopelman, Wilson and Baddeley 1989<br>Structure of AM: Anderson and Conway 1993<br>Dissociating Episodic from Semantic Retrieval: Levine et al 2002 | 5. I can remember where this memory happened. |

| | | | |
|---|---|---|---|
| SPE6 | Detailed story | AM Interview : Kopelman, Wilson and Baddeley 1989 | 6. I can remember the detailed story of what happened. |
| SPE7 | Event (happenings) | Dissociating Episodic from Semantic Retrieval: Levine et al 2002<br><br>Qualitative interviews | 7. I can recall the setting where it occurred. |
| SPE8 | People involved<br><br>People<br><br>other people and their behaviour and clothing | AM Interview : Kopelman, Wilson and Baddeley 1989<br><br>Structure of AM: Anderson and Conway 1993<br><br>Dissociating Episodic from Semantic Retrieval: Levine et al 2002 | 8. I cannot remember people involved in this memory event (RC). |
| SPE9 | Objects | Structure of AM: Anderson and Conway 1993<br><br>Qualitative Interviews | 9. I can remember the packaging of the brand. |

## Vividness (Perceptual Information)

| Item | Original Item | Reference | Items used in the questionnaire |
|---|---|---|---|
| VIVI1 | As I remember the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | Belief and Recollection of Autobiographical Memories:<br>Rubin, Schrauf and Greenburg 2003 | 1. It comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. |
| VIVI2 | I can see it in my own eyes rather than that of an outside observer. | Autobiographical memory for very negative events: The effects of thinking about and rating memories : Boals, Rubin and Klein 2008 | 2. I feel that I see it out of my own eyes rather than that of an outside observer. |
| VIVI3 | The images that came to mind while I watched the commercial were well defined | Advertisement –evoked mental imagery measurement scale: Miller et al 2000 | 3. The images that come to mind is well defined. |
| VIVI4 | While I watched the commercial, many images came to my mind<br><br>As I remember the event, I can see it in my mind | Advertisement –evoked mental imagery measurement scale: Miller et al 2000<br><br>Twins dispute memory ownership: A new false memory phenomenon : Sheen, Kemp and Rubin 2001 | 4. I can see it in my mind. |
| VIVI5 | While I watched the commercial, I imagined sounds<br><br>Sensory information (sounds)<br><br>As I remember the event, I can hear it in my mind | Advertisement –evoked mental imagery measurement scale: Miller et al 2000<br><br>Dissociating Episodic from Semantic Retrieval : Levine et al 2002<br><br>Twins dispute memory ownership: A new false memory phenomenon : Sheen, Kemp and Rubin 2001 | 5. I can hear it in my mind. |
| VIVI6 | While I watched the commercial, I imagined visual scenes<br><br>Sensory information (visual images, colours) | Advertisement –evoked mental imagery measurement scale: Miller et al 2000<br><br>Dissociating Episodic from Semantic Retrieval : Levine et al 2002 | 6. I can picture the brand. |

| | | | |
|---|---|---|---|
| VIVI7 | The images that came to mind while I watched the commercial were clear | Advertisement –evoked mental imagery measurement scale: Miller et al 2000 | 7. The images that come to mind is vivid. |
| VIVI8 | The images that came to mind while I watched the commercial were clear | Advertisement –evoked mental imagery measurement scale: Miller et al 2000 | 8. The images that come to mind is clear. |
| VIVI9 | I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur. | Twins dispute memory ownership: A new false memory phenomenon : Sheen, Kemp and Rubin 2001 | 9. I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur. |

## Affect (Emotions, feelings and moods)

| Item | Original Item | Reference | Items used in the questionnaire |
|---|---|---|---|
| AFF1 | Happy | The Impact of Feelings on Ad-Based Affect and Cognition :Burke and Edell 1989<br><br>Emotions on behavioural intentions: Bigne, Mattila and Andreu 2008<br><br>Affective responses to advertising: Batra and Holbrook 1990<br><br>Cognitive appraisal of emotions: Smith and Ellsworth 1985<br><br>Emotions measurements: Sherer 2005 | 1. I feel happy. |
| AFF2 | As I remember the event I feel as though I am reliving it | Twins dispute memory ownership: A new false memory phenomenon : Sheen, Kemp and Rubin 2001<br><br>The frequency of voluntary and involuntary | 2. I feel as though I am reliving it. |

| | | | |
|---|---|---|---|
| | | autobiographical memories across the life span : Rubin and Berntsen 2009 | |
| AFF3 | As I remember the event, I can feel now the emotion I felt then<br><br>While remembering the event, I feel the emotions as strongly as I did then | Twins dispute memory ownership: A new false memory phenomenon : Sheen, Kemp and Rubin 2001<br><br>Emotional Intensity predicts autobiographical memory experience: Talarico, LaBar and Rubin 2004 | 3. I feel the same particular emotions I felt at the time of the event. |
| AFF4 | Good | Measuring Emotions in the Consumption Experience: Richins 1997<br><br>Qualitative Interviews | 4. I felt this brand memory was very good. |
| AFF5 | Enjoyable<br><br>Joyous | How to measure emotions : Sherer 2005<br><br>Distinguish between feelings and emotions: Hansen 2005<br><br>The Impact of Feelings on Ad-Based Affect and Cognition :Burke and Edell 1989 | 5. I felt very enjoyable. |
| AFF6 | Negative | Brand connections and emotions: Moore and Wuster 2007<br><br>Emotions measurements: Sherer 2005 | 6. The emotions are negative (RC). |
| AFF7 | The remembered event is a very important part of my life story<br><br>Important | The frequency of voluntary and involuntary autobiographical memories across the life span : Rubin and Berntsen 2009<br><br>Qualitative Interviews | 7. Is important to me. |
| AFF8 | This memory is significant for my life because it imparts an important message for me or represents an anchor, critical juncture or turning point.<br><br>Significant | Twins dispute memory ownership: A new false memory phenomenon : Sheen, Kemp and Rubin 2001<br><br>Qualitative Interviews | 8. Is not a significant memory to me (RC). |

| | | | |
|---|---|---|---|
| AFF9 | Positive | Emotions measurements: Sherer 2005 | 9. Makes me feel positive towards the brand.<br>10. |
| AFF10 | Worth remembering | The Impact of Feelings on Ad-Based Affect and Cognition :Burke and Edell 1989 | 11. Is not worth remembering (RC). |
| AFF11 | Sentimental | The Impact of Feelings on Ad-Based Affect and Cognition :Burke and Edell 1989<br><br>Measuring Emotions in the Consumption Experience: Richins 1997<br><br>Qualitative Interviews | 12. Because of this event, this brand is sentimental to me. |

RC – Reverse-coded items

# Appendix 4.11: Question items for expert judgement

**Project Title: Assessing the Predictive Validity of Brand-Related Autobiographical Memories (BRAM) on Brand Commitment Implications**

## 1. Research Overview

**Research Initiative**
Consumer decisions are largely influenced by memory through their prior experiences (Mantonakis and Whittlesea 2008; Bettman 1986). Although studies in consumer research evidence the influence of consumer memory on brand choice, more focus has been placed on investigating semantic knowledge rather than affect-associated episodic memory systems (Nedungadi 1990; Coates et al. 2004; Butler and Berry 2001; Sanyal 1992; Biehal and Chakravarti 1986; Braun-LaTour et al. 2006). In parallel, calls for research on creating and sustaining emotional brand relationships continue to be reported (Marketing Science Institute 2008; Reed 2002; Fournier 1998). Thus, the focus of study is on episodic memory systems and emotional brand relations.

The episodic/semantic memory is the most predominant in consumer research which distinguishes the preservation of detail and context of prior experiences from the preservation of context-free, abstract summary properties of those experiences (Mantonakis and Whittlesea 2008, p.78). Autobiographical memory (ABM), a subset of episodic memory which deals with personal events (Nelson 1993; Gilboa 2004) has been researched extensively in psychology and medicinal sciences and found to have a profound impact on human behaviour (Conway et al. 2005; Addis and Tippett 2004). However, investigation of the episodic nature of ABM has received less attention in consumer behaviour research (Krugman 1965; Sujan, Bettman and Baumgartner 1993; Baumgartner, Sujan and Bettman 1992) than semantic memory (Baumgartner, Sujan and Bettman 1992; Keller 1987; Sujan, Bettman and Baumgartner 1993).When brand experience/perceived brand image is retained as episodes in ABM, this brand-related autobiographical memory (BRAM) may strongly influence future brand decisions.

**Research Question**
To what extent autobiographical memories (ABM) influence consumer brand decisions?

**Research Aim and Objectives**
To investigate the relationship between consumer brand-related autobiographical memories (BRAM) and brand commitment;
1. To develop a nomological network of relationships between BRAM and brand commitment.
2. To investigate antecedent state of self-brand congruence on BRAM.
3. To test the influence of BRAM on brand commitment.

## 2. Main construct and operational definitions

**Construct:** Brand-Related Autobiographical Memory (BRAM)

**Definition:** Brand image (i.e brand benefits/ personality characteristics) retained in consumer personal memories together with related contextual information, perceptual information and an affect.

**Dimension 1: Specificity (Contextual information)**
Remembering contextual information related to brand related personal memory (BABM) reconstructed through a hierarchical retrieval process including when, where, and how the event has happened.

**Dimension 2: Vividness (Perceptual information)**
Mental reconstruction of brand related personal memory (BRAM) and/or brand in visual, tactual, auditory, gustatory and olfactory senses.

**Dimension 3: Affect**
Remembering or reconstructing feelings, mood or emotions experienced in brand related personal memory (BRAM) and/or the brand.

**Question items for expert judgement**

**Question items**
Please complete the two tasks explained below in the two shaded columns against each item.

*Task 1:*
Based on the definition for each dimension (given above), please identify most relevant items to measure each dimension by indicating;
**'S' for specificity; 'V' for vividness and 'A' for Affect** in the first shaded column (labelled as Dimension) for each item.

*Task 2:*
Once items are selected for each dimension, based on the relative importance to measure each dimension, please identify **only 5 items** for each and number them from 1 -5 (based on the relative importance, '1'as the most important) in the second shaded column.

| **Contextual Information/ Specificity** | | Very well | | | | Not at all | DIMENSION (S, V or A) | RANK ON IMPORTANCE (1-5) |
|---|---|---|---|---|---|---|---|---|
| 1. | When I recall this memory, I can remember when this event happened. | | | | | | | |
| 2. | I can remember the year when this event happened. | | | | | | | |
| 3. | I can remember the month when this event happened. | | | | | | | |
| 4. | I can remember the season when this event happened. | | | | | | | |
| 5. | I can remember the day (i.e. Monday etc) when this event happened. | | | | | | | |
| 6. | I can remember the time of the day this event happened. | | | | | | | |
| 7. | I can remember the events that occurred before this event. | | | | | | | |
| 8. | I can remember my age when this event happened | | | | | | | |
| 9. | I can remember the events that occurred after this event. | | | | | | | |
| 10. | I can remember how long before this event happened | | | | | | | |

| **Contextual Information/ Specificity** | | Very well | | | | Not at all | DIMENSION (S, V or A) | RANK ON IMPORTANCE (1-5) |
|---|---|---|---|---|---|---|---|---|
| 11. | When I recall this memory, I can remember where (location) this event happened. | | | | | | | |
| 12. | I can remember the country where this event happened. | | | | | | | |
| 13. | I can remember the state where this event happened. | | | | | | | |
| 14. | I can remember the province where this event happened. | | | | | | | |
| 15. | I can remember the city where this event happened. | | | | | | | |
| 16. | I can remember the street where this event happened. | | | | | | | |
| 17. | I can remember the address where this event happened. | | | | | | | |
| 18. | I can remember the room within the building where this event happened. | | | | | | | |
| 19. | I can remember the location within the room where this event happened. | | | | | | | |
| 20. | I can remember the weather condition when this event happened. | | | | | | | |
| 21. | When I recall this memory, I can remember people involved in this event. | | | | | | | |
| 22. | I can remember clothing people wore in the event. | | | | | | | |
| 23. | I can remember objects involved in the event. | | | | | | | |
| 24. | I can remember colour of clothing people wore in the event. | | | | | | | |
| 25. | I can remember the setting (surrounding) involved in the event. | | | | | | | |
| 26. | I can remember the colour of the brand associated with this event | | | | | | | |
| 27. | I can remember the packaging of the brand associated with this event. | | | | | | | |
| 28. | I can remember the advert of the brand associated with this event. | | | | | | | |
| 29. | I can remember the brand logo associated with this event. | | | | | | | |

| | | SDA | DA | NAND | A | SA | | |
|---|---|---|---|---|---|---|---|---|
| 30. | This event is related to a life time period ((eg; When I was a child, when I was at the university, When I got married) | | | | | | | |
| 31. | This event is related to a general day today event (eg: having meals with family, going to school, going to work) | | | | | | | |
| 32. | This event is related to a specific event (eg: birthday party, wedding, first day of new job, going on a holiday) | | | | | | | |
| 33. | I can remember the detailed story of what happened in the event. | | | | | | | |
| 34. | I can remember actions/behaviours involved in the event. | | | | | | | |
| **Perceptual information/Vividness** | | Very well | | | | Not at all | | |
| | When I recall BRAM, | | | | | | | |
| 35. | I can mentally visualise the picture of the event | | | | | | | |
| 36. | I can mentally visualise the picture of the brand | | | | | | | |
| 37. | I can mentally visualise the exact brand logo | | | | | | | |
| 38. | I can mentally visualise the colour of the brand's package design | | | | | | | |
| 39. | I can mentally visualise the shape of the brand's package design | | | | | | | |
| 40. | I can mentally visualise the advertisements of the brand | | | | | | | |
| 41. | I can imagine/hear the sounds associated with the event | | | | | | | |
| 42. | I can imagine/remember the taste associated with the event | | | | | | | |
| 43. | I can imagine/smell (scents) associated with the event | | | | | | | |
| 44. | The images that came to mind when recalling the BRAM are vivid | | | | | | | |
| 45. | The images that came to mind when recalling the BRAM are vague | | | | | | | |
| 46. | The images that came to mind when recalling the BRAM are clear | | | | | | | |

| | | SA | A | NAND | D | SD | | |
|---|---|---|---|---|---|---|---|---|
| 47. | The images that came to mind when recalling the BRAM is unclear | | | | | | | |
| 48. | The images that came to mind when recalling the BRAM is distinct | | | | | | | |
| 49. | The images that came to mind when recalling the BRAM is dull | | | | | | | |
| 50. | The images that came to mind when recalling the BRAM is weak | | | | | | | |
| 51. | The images that came to mind when recalling the BRAM is lifelike | | | | | | | |
| 52. | The images that came to mind when recalling the BRAM is lifeless | | | | | | | |
| 53. | The images that came to mind when recalling the BRAM is fussy | | | | | | | |
| 54. | The images that came to mind when recalling the BRAM is well defined | | | | | | | |
| **Affect** | | SA | A | NAND | D | SD | | |
| 55. | While recalling the event, I felt the memory was very enjoyable | | | | | | | |
| 56. | While recalling the event, I felt the memory was very pleasant | | | | | | | |
| 57. | While recalling the event, I felt the memory was very good | | | | | | | |
| 58. | While recalling the event, I felt the memory was very nice | | | | | | | |
| 59. | I felt the memory was most likeable when recalled the event | | | | | | | |
| 60. | While recalling the event, I felt the memory was very positive | | | | | | | |
| **While recalling the brand related event, I feel** | | | | | | | | |
| 61. | Active | | | | | | | |
| 62. | Adventurous | | | | | | | |
| 63. | Affectionate | | | | | | | |
| 64. | Afraid | | | | | | | |
| 65. | Alerted | | | | | | | |
| 66. | Alive | | | | | | | |
| 67. | Amused | | | | | | | |
| 68. | Angry | | | | | | | |
| 69. | Annoyed | | | | | | | |
| 70. | Ashamed | | | | | | | |
| 71. | Attentive | | | | | | | |
| 72. | Attractive | | | | | | | |
| 73. | Bad | | | | | | | |
| 74. | Awesome | | | | | | | |
| 75. | Being valued | | | | | | | |
| 76. | Believable | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 77. | Bored | | | | | | | |
| 78. | Calm | | | | | | | |
| 79. | Carefree | | | | | | | |
| 80. | Caring | | | | | | | |
| 81. | Cheerful | | | | | | | |
| 82. | Comfort | | | | | | | |
| 83. | Concerned | | | | | | | |
| 84. | Confident | | | | | | | |
| 85. | Contemplative | | | | | | | |
| 86. | Convinced | | | | | | | |
| 87. | Cool | | | | | | | |
| 88. | Creative | | | | | | | |
| 89. | Critical | | | | | | | |
| 90. | Defiant | | | | | | | |
| 91. | Delighted | | | | | | | |
| 92. | Depressed | | | | | | | |
| 93. | Disgusted | | | | | | | |
| 94. | Disinterested | | | | | | | |
| 95. | Distressed | | | | | | | |
| 96. | Downhearted | | | | | | | |
| 97. | Dubious | | | | | | | |
| 98. | Dull | | | | | | | |
| 99. | Elated | | | | | | | |
| 100. | Emotional | | | | | | | |
| 101. | Energetic | | | | | | | |
| 102. | Enraged | | | | | | | |
| 103. | Enthusiastic | | | | | | | |
| 104. | Exciting | | | | | | | |
| 105. | Exhilarated | | | | | | | |
| 106. | Fear | | | | | | | |
| 107. | Fed-up | | | | | | | |
| 108. | For me | | | | | | | |
| 109. | Fascinating | | | | | | | |
| 110. | Friendly | | | | | | | |
| 111. | Gentle | | | | | | | |
| 112. | Guilty | | | | | | | |
| 113. | Happy | | | | | | | |
| 114. | Hopeful | | | | | | | |
| 115. | Humorous | | | | | | | |
| 116. | I am In a bad mood | | | | | | | |
| 117. | Imaginative | | | | | | | |
| 118. | Independent | | | | | | | |
| 119. | Industrious | | | | | | | |
| 120. | Informative | | | | | | | |
| 121. | Ingenious | | | | | | | |
| 122. | Inspired | | | | | | | |
| 123. | Insulted | | | | | | | |
| 124. | Interested | | | | | | | |
| 125. | Irritated | | | | | | | |
| 126. | Irritating | | | | | | | |
| 127. | Joyful | | | | | | | |
| 128. | Kind | | | | | | | |
| 129. | Lazy | | | | | | | |
| 130. | Light-hearted | | | | | | | |
| 131. | Lively | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 132. | Lonely | | | | | | | |
| 133. | Lovely | | | | | | | |
| 134. | Loving | | | | | | | |
| 135. | Meaningful to me | | | | | | | |
| 136. | Merry | | | | | | | |
| 137. | Moved | | | | | | | |
| 138. | Nervous | | | | | | | |
| 139. | Novel | | | | | | | |
| 140. | Offended | | | | | | | |
| 141. | Optimism | | | | | | | |
| 142. | Patriotic | | | | | | | |
| 143. | Peaceful | | | | | | | |
| 144. | Pensive | | | | | | | |
| 145. | Phony | | | | | | | |
| 146. | Playful | | | | | | | |
| 147. | Pleased | | | | | | | |
| 148. | Proud | | | | | | | |
| 149. | Regretful | | | | | | | |
| 150. | Ridiculous | | | | | | | |
| 151. | Romantic love | | | | | | | |
| 152. | Sad | | | | | | | |
| 153. | Satisfied | | | | | | | |
| 154. | Sceptical | | | | | | | |
| 155. | Sentimental | | | | | | | |
| 156. | Serene | | | | | | | |
| 157. | Shamed | | | | | | | |
| 158. | Silly | | | | | | | |
| 159. | Soothing | | | | | | | |
| 160. | Sorry | | | | | | | |
| 161. | Stimulated | | | | | | | |
| 162. | Strong | | | | | | | |
| 163. | Surprised | | | | | | | |
| 164. | Suspicious | | | | | | | |
| 165. | Tender | | | | | | | |
| 166. | Shocked | | | | | | | |
| 167. | Terrible | | | | | | | |
| 168. | Touched | | | | | | | |
| 169. | Troublesome | | | | | | | |
| 170. | Unique | | | | | | | |
| 171. | Upset | | | | | | | |
| 172. | Valuable | | | | | | | |
| 173. | Vigorous | | | | | | | |
| 174. | Warm-hearted | | | | | | | |
| 175. | Worrying | | | | | | | |
| 176. | Worth remembering | | | | | | | |

Many thanks for your time and support in completing the expert judgement.
I would appreciate it if you could complete this on or before 31st July 2009.

# Appendix 4.12: Original items used to measure BRSM, self-brand congruence and brand commitment

## BRSM

| | **Items used in the questionnaire** | **Reference** | **Original Item** |
|---|---|---|---|
| KNOW1 | I am well aware of this brand. | Smith and Park 1992<br>(4 items)<br>Cronbach's alpha - 0.80 | I feel very knowledgeable about this product*. |
| | | | If a friend asked me about this product, I could give them advice. |
| KNOW2 | This brand is not familiar to me. | | If I had to purchase this product today, 1 would need to gather very little information in order to make a wise decision. |
| KNOW3 | My knowledge about this brand is very strong. | | I feel very confident about my ability to tell the difference in quality of this product. |
| KNOW4 | I have known about this brand for many years. | Kent and Allen 1994<br>(3-items)<br>Cronbach's alpha – 0.85 | Regarding the product , are you,<br>Familiar/unfamiliar<br>Inexperienced/experienced,<br>Knowledgeable/not knowledgeable* |
| KNOW5 | I know what the brand image is. | | |

*These two items are identical

## Self-Brand Congruence

| Item | Original Item | Reference | Items used in the questionnaire |
|---|---|---|---|
| SC1 | This outfit is consistent with how I see myself at work. | Sirgy et al 1997<br>Cronbatch Alpha 0.90 | Is consistent with how I see myself. |
| SC2 | This outfit reflects who I am at work. | | Reflects who I am. |
| SC3 | People similar to me wear outfits like this at work. | | Is used by people similar to me. |
| SC4 | The kind of person who typically wears this outfit at work is very much like me. | | Is a typical brand used by people who are very much like me. |
| SC5 | This outfit is a mirror image of me. | | Is a mirror image of me. |

## Brand Commitment

| Item | Items used in the questionnaire | Reference | Original Item |
|---|---|---|---|
| ATBC1 | I would recommend this brand to others in the future. | Evanschitzky et al 2006<br>Cronbach's alpha 0.75 | I would recommend the brand in the future. |
| BBC2 | When another brand is on sale, I will generally purchase it rather than my usual brand (RC). | | I will prefer this brand as opposed to others in the future. |
| AFFBC1 | I identify with the brand. | | I identify with the brand |
| AFFBC2 | I feel emotionally attached to the brand. | | I feel emotionally attached to the brand. |

| | | | |
|---|---|---|---|
| AFFBC4 | Over the years, I have bought the same brand. | | I bought the same brand for the past 12 months |
| BBC3 | I stick with this brand because I know it is the best for me. | Coulter, Price and Feick 2003<br>Broderick 2007<br>Cronbach's alpha 0.92 | I stick with this brand because I know it is the best for me. |
| AFFBC3 | I am committed to this brand. | | I am committed to this brand. |
| BBC1 | I consider myself to be highly loyal to this brand. | Beatty and Kahle 1988<br>Cronbach's alpha 0.70 | I consider myself to be highly loyal to this brand. |
| ATBC2 | I would be proud to tell others that I use this brand. | Park and Kim 2003<br>Cronbach's alpha 0.86 | I would be proud to tell others that I use this website |

RC – Reverse-coded items

# Appendix 4.13: The survey questionnaire for pilot testing

Participant's Reference Code: …….

I very much appreciate your help with my research study on brand-related memories. Please answer the following questions. All answers will remain anonymous and at no point will you be identified in the analysis.

1. Thinking about your 'life time memories' (i.e. specific, personal, long-lasting, and usually of significance to yourself, do you have any brands associated with these memories? An example of such memory is quoted below for more clarity;

*"For my 18th B'day, I've got my first '**Designer**' bag. This was a gift from my dad and it came through the post in the morning. He didn't handover to me because he was away. I got the delivery in the morning, I saw this big box, I was thinking…., what's in this and then I tried to open but I couldn't. I just took a knife and opened it. Then I saw a designer bag, and I was really excited!!!"*

*Although your memories may be related to any of the following situations, you may have your own other memory experiences.*

- Playing with friends in childhood days.
- Participating in a school concert or sports day.
- Winning a competition or a sports event.
- Relating to a shopping experience.
- Receiving a birthday gift or Christmas gift.
- General events such as dining with family.
- Holiday memories.
- First day at senior school, university or first job.
- Relates to special occasions such as weddings, graduations etc.
- Any disappointing incident.

Yes ☐
No ☐

If 'Yes' please continue to question no. 2. If 'no' please end the survey and thank you very much for your intention to participate.

2. What is the brand name that is most associated with your personal memories (*as per the example in question1*)? Please write the brand name below together with one line description about the brand – related memory.
   Brand Name: ….……..
   Memory Description (in one sentence):
   ……..…….
   ……
   ……
3. What was your age at that time? ……..…. years.

Of the brand and brand-related memory detailed above, please answer following questions;
*Please use the following scale to answer the subsequent statements. For example*

| *Strongly Disagree* | *Disagree* | *Neither* | *Agree* | *Strongly Agree* |
|---|---|---|---|---|
| **1** | **X 2** | **3** | **4** | **5** |

***Please " X " only one number for each statement.***

**A: When thinking about my memory surrounding this brand;**

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 1. | While remembering the brand memory, I feel that I travel back to the time when it happened. | 1 | 2 | 3 | 4 | 5 |
| 2. | As I think about the event, I can actually remember it rather than just knowing that it happened. | 1 | 2 | 3 | 4 | 5 |
| 3. | I can remember the day when this brand memory event happened. | 1 | 2 | 3 | 4 | 5 |
| 4. | I can remember my age when this brand memory happened. | 1 | 2 | 3 | 4 | 5 |
| 5. | When I recall this brand memory, I can remember where this memory happened. | 1 | 2 | 3 | 4 | 5 |
| 6. | When I recall this brand memory, I cannot remember people involved in this memory event. | 1 | 2 | 3 | 4 | 5 |
| 7. | As I remember the event, I can recall the setting where it occurred. | 1 | 2 | 3 | 4 | 5 |
| 8. | I can remember the detailed story of what happened in this memory event. | 1 | 2 | 3 | 4 | 5 |
| 9. | This was an important memory to me. | 1 | 2 | 3 | 4 | 5 |
| 10. | This was not a significant memory to me. | 1 | 2 | 3 | 4 | 5 |
| 11. | I can remember the packaging of the brand associated with this memory event. | 1 | 2 | 3 | 4 | 5 |
| 12. | I can remember the advert of the brand associated with this memory event. | 1 | 2 | 3 | 4 | 5 |
| 13. | While remembering the event, I feel as though I am reliving it. | 1 | 2 | 3 | 4 | 5 |
| 14. | While remembering the event, I feel the same particular emotions I felt at the time of the event. | 1 | 2 | 3 | 4 | 5 |
| 15. | While recalling the event, I felt this brand memory was not very enjoyable. | 1 | 2 | 3 | 4 | 5 |
| 16. | While remembering the event, I feel the emotions as strongly as I did then as if it were happening now. | 1 | 2 | 3 | 4 | 5 |
| 17. | The emotions that I feel are extremely intense. | 1 | 2 | 3 | 4 | 5 |
| 18. | While remembering the event, the emotions are negative. | 1 | 2 | 3 | 4 | 5 |
| 19. | While recalling the event, I felt this brand memory was very good. | 1 | 2 | 3 | 4 | 5 |
| 20. | This memory event makes me feel positive towards the brand. | 1 | 2 | 3 | 4 | 5 |
| 21. | This brand-related memory event is not worth remembering. | 1 | 2 | 3 | 4 | 5 |
| 22. | I feel happy when I recall this memory experience. | 1 | 2 | 3 | 4 | 5 |
| 23. | Because of this event, this brand is sentimental to me. | 1 | 2 | 3 | 4 | 5 |

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 24. | While remembering the event, I feel my heart pound, or race. | 1 | 2 | 3 | 4 | 5 |
| 25. | While remembering the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | 1 | 2 | 3 | 4 | 5 |
| 26. | I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur. | 1 | 2 | 3 | 4 | 5 |
| 27. | While remembering the event, I feel that I see it out of my own eyes rather than that of an outside observer. | 1 | 2 | 3 | 4 | 5 |
| 28. | While remembering this brand memory, I can see it in my mind. | 1 | 2 | 3 | 4 | 5 |
| 29. | While remembering the event, I can hear it in my mind. | 1 | 2 | 3 | 4 | 5 |
| 30. | When I recall this brand memory, I can picture the brand. | 1 | 2 | 3 | 4 | 5 |
| 31. | The images that came to mind when recalling this brand memory are vivid. | 1 | 2 | 3 | 4 | 5 |
| 32. | The images that came to mind when recalling this brand memory are vague. | 1 | 2 | 3 | 4 | 5 |
| 33. | The images that came to mind when recalling this brand memory are clear. | 1 | 2 | 3 | 4 | 5 |
| 34. | The images that came to mind when recalling this brand memory are distinct. | 1 | 2 | 3 | 4 | 5 |
| 35. | The images that came to mind when recalling this brand memory are weak. | 1 | 2 | 3 | 4 | 5 |
| 36. | The images that came to mind when recalling this brand memory are well defined. | 1 | 2 | 3 | 4 | 5 |

**B: About Purchase Intention**

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 37.1 | I always buy this brand in this product category. | 1 | 2 | 3 | 4 | 5 |
| 37.2 | I buy this brand frequently. | 1 | 2 | 3 | 4 | 5 |
| 37.3 | I have bought this brand for many years. | 1 | 2 | 3 | 4 | 5 |
| 37.4 | I will continue purchasing this brand. | 1 | 2 | 3 | 4 | 5 |
| 37.5 | To me this brand is the best choice in this product category. | 1 | 2 | 3 | 4 | 5 |
| 37.6 | I consider myself a loyal customer of this brand. | 1 | 2 | 3 | 4 | 5 |
| 37.7 | I intend to buy this brand frequently. | 1 | 2 | 3 | 4 | 5 |
| 37.8 | I plan to buy this brand more often. | 1 | 2 | 3 | 4 | 5 |
| 37.9 | The next brand I buy in this product category will be this one. | 1 | 2 | 3 | 4 | 5 |

**C: About Brand Knowledge**

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 38.1 | This brand is trustworthy. | 1 | 2 | 3 | 4 | 5 |
| 38.2 | This brand is of excellent quality. | 1 | 2 | 3 | 4 | 5 |
| 38.3 | This brand has consistent quality. | 1 | 2 | 3 | 4 | 5 |
| 38.4 | This brand would perform consistently. | 1 | 2 | 3 | 4 | 5 |
| 38.5 | This brand gives the best value for money. | 1 | 2 | 3 | 4 | 5 |
| 38.6 | This brand is prestigious. | 1 | 2 | 3 | 4 | 5 |
| 38.7 | This brand is distinctive. | 1 | 2 | 3 | 4 | 5 |
| 38.8 | This brand makes a statement. | 1 | 2 | 3 | 4 | 5 |
| 38.9 | This brand is totally in line with my life style. | 1 | 2 | 3 | 4 | 5 |
| 38.10 | This brand is a social status symbol. | 1 | 2 | 3 | 4 | 5 |
| 38.11 | This brand has a good reputation. | 1 | 2 | 3 | 4 | 5 |
| 38.12 | This is the brand leader. | 1 | 2 | 3 | 4 | 5 |
| 38.13 | This brand makes me feel good. | 1 | 2 | 3 | 4 | 5 |
| 38.14 | This brand gives me pleasure. | 1 | 2 | 3 | 4 | 5 |
| 38.15 | This is the brand that I feel relaxed about using. | 1 | 2 | 3 | 4 | 5 |
| I like this brand because it has following characteristics; | | | | | | |
| 39.1 | Down to earth | 1 | 2 | 3 | 4 | 5 |
| 39.2 | Honest | 1 | 2 | 3 | 4 | 5 |
| 39.3 | Wholesome | 1 | 2 | 3 | 4 | 5 |
| 39.4 | Cheerful | 1 | 2 | 3 | 4 | 5 |
| 39.5 | Daring | 1 | 2 | 3 | 4 | 5 |
| 39.6 | Spirited | 1 | 2 | 3 | 4 | 5 |
| 39.7 | Imaginative | 1 | 2 | 3 | 4 | 5 |
| 39.8 | Up to date | 1 | 2 | 3 | 4 | 5 |
| 39.9 | Reliable | 1 | 2 | 3 | 4 | 5 |
| 39.10 | Intelligence | 1 | 2 | 3 | 4 | 5 |
| 39.11 | Successful | 1 | 2 | 3 | 4 | 5 |
| 39.12 | Upper class | 1 | 2 | 3 | 4 | 5 |
| 39.13 | Charming | 1 | 2 | 3 | 4 | 5 |
| 39.14 | Outdoorsy | 1 | 2 | 3 | 4 | 5 |
| 39.15 | Tough | 1 | 2 | 3 | 4 | 5 |
| This brand; | | | | | | |
| 39.16 | Reminds me of the past. | 1 | 2 | 3 | 4 | 5 |
| 39.17 | Helps me recall pleasant memories. | 1 | 2 | 3 | 4 | 5 |
| 39.18 | Makes me feel nostalgic. | 1 | 2 | 3 | 4 | 5 |

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 39.19 | Makes me reminisce (recall) about a previous time. | 1 | 2 | 3 | 4 | 5 |
| 39.20 | Makes me thinks about when I was younger. | 1 | 2 | 3 | 4 | 5 |
| 39.21 | Evokes fond memories. | 1 | 2 | 3 | 4 | 5 |
| 39.22 | Is a pleasant reminder of the past. | 1 | 2 | 3 | 4 | 5 |
| 39.23 | Brings back memories of good times from the past. | 1 | 2 | 3 | 4 | 5 |
| 39.24 | Remind me of the good old days. | 1 | 2 | 3 | 4 | 5 |
| 39.25 | Reminds me of good times in the past. | 1 | 2 | 3 | 4 | 5 |
| 40.1 | My knowledge about this brand is very strong. | 1 | 2 | 3 | 4 | 5 |
| 40.2 | I have known about this brand for many years. | 1 | 2 | 3 | 4 | 5 |
| 40.3 | I know what the brand image is. | 1 | 2 | 3 | 4 | 5 |
| **D. About involvement, influences and brand commitment** | | | | | | |
| 41.1 | I have a strong interest in this brand. | 1 | 2 | 3 | 4 | 5 |
| 41.2 | I attach great importance to this brand. | 1 | 2 | 3 | 4 | 5 |
| 41.3 | I do not enjoy buying this brand. | 1 | 2 | 3 | 4 | 5 |
| 41.4 | Buying this brand helps me express my personality. | 1 | 2 | 3 | 4 | 5 |
| 41.5 | I can tell a lot about a person by the brand she/he buys. | 1 | 2 | 3 | 4 | 5 |
| 42.1 | I purchase this brand because my friends approve of them. | 1 | 2 | 3 | 4 | 5 |
| 42.2 | I purchase this brand because others do not like this. | 1 | 2 | 3 | 4 | 5 |
| 42.3 | I purchase this brand as it make good impressions on me. | 1 | 2 | 3 | 4 | 5 |
| 42.4 | I achieve a sense of belonging by purchasing this brand as others purchase the same brand. | 1 | 2 | 3 | 4 | 5 |
| 42.5 | I often identify with other people by purchasing this brand as others purchase the same brand. | 1 | 2 | 3 | 4 | 5 |
| 42.6 | To make sure I buy the right product or brand, I often observe what others buy and use. | 1 | 2 | 3 | 4 | 5 |
| 42.7 | I often ask my friends about brands they use when I have little experience. | 1 | 2 | 3 | 4 | 5 |
| 42.8 | I often consult other people to help choose the best alternative available from the product class. | 1 | 2 | 3 | 4 | 5 |
| 42.9 | I frequently gather information from friends or family about a brand before I buy. | 1 | 2 | 3 | 4 | 5 |
| 43.1 | I would recommend this brand to others in the future. | 1 | 2 | 3 | 4 | 5 |
| 43.2 | I will prefer this brand as opposed to others in the product category. | 1 | 2 | 3 | 4 | 5 |

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 43.3 | I would be proud to tell others that I use this brand. | 1 | 2 | 3 | 4 | 5 |
| 43.4 | When talking to people, I say only good things about this brand. | 1 | 2 | 3 | 4 | 5 |
| 43.5 | I consider myself to be highly loyal to this brand. | 1 | 2 | 3 | 4 | 5 |
| 43.6 | If this brand is not available in the store, it would make a little difference to me if I chose another brand. | 1 | 2 | 3 | 4 | 5 |
| 43.7 | When another brand is on sale, I will generally purchase it rather than my usual brand. | 1 | 2 | 3 | 4 | 5 |
| 43.8 | I stick with this brand because I know it is the best for me. | 1 | 2 | 3 | 4 | 5 |
| 43.9 | I feel that I can trust the brand. | 1 | 2 | 3 | 4 | 5 |
| 43.10 | I identify with the brand. | 1 | 2 | 3 | 4 | 5 |
| 43.11 | I feel emotionally attached to the brand. | 1 | 2 | 3 | 4 | 5 |
| 43.12 | I am committed to this brand. | 1 | 2 | 3 | 4 | 5 |
| 43.13 | Over the years, I have bought the same brand as I really like this brand. | 1 | 2 | 3 | 4 | 5 |
| 43.14 | I am really attached to this brand. | 1 | 2 | 3 | 4 | 5 |
| 44.1 | I have a relationship with this brand because this is what my family members used to use/ buy. | 1 | 2 | 3 | 4 | 5 |
| 44.2 | This brand reminds me of a happy childhood time. | 1 | 2 | 3 | 4 | 5 |
| 44.3 | This brand related memory gives me comfort or security of my past life. | 1 | 2 | 3 | 4 | 5 |
| 44.4 | I don't use this brand very frequently. | 1 | 2 | 3 | 4 | 5 |
| 44.5 | I don't have high expectations about this brand. | 1 | 2 | 3 | 4 | 5 |
| 44.6 | This brand has given me a positive experience. | 1 | 2 | 3 | 4 | 5 |
| 44.7 | This brand has given me a negative experience. | 1 | 2 | 3 | 4 | 5 |
| 44.8 | This brand is widely available. | 1 | 2 | 3 | 4 | 5 |
| 44.9 | It is very convenient to buy this brand. | 1 | 2 | 3 | 4 | 5 |
| 44.10 | I use this brand only on special occasions. | 1 | 2 | 3 | 4 | 5 |
| 44.11 | I am attached to this brand in the product category because I dropped the previous brand having a negative experience. | 1 | 2 | 3 | 4 | 5 |
| 44.12 | I randomly had a chance to use this brand in the trial period and after the trial period; I felt I am attached to it. | 1 | 2 | 3 | 4 | 5 |
| 44.13 | I am very dependent on this brand. | 1 | 2 | 3 | 4 | 5 |
| 44.14 | This brand is my own choice. | 1 | 2 | 3 | 4 | 5 |
| 44.15 | I have this brand because others have influenced (imposed) me to buy/use this brand. | 1 | 2 | 3 | 4 | 5 |

**E. About yourself**

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 45.1 | This brand is consistent with how I see myself. | 1 | 2 | 3 | 4 | 5 |
| 45.2 | This brand reflects who I am. | 1 | 2 | 3 | 4 | 5 |
| 45.3 | People similar to me used to have this brand. | 1 | 2 | 3 | 4 | 5 |
| 45.4 | This brand is consistent with how others see me. | 1 | 2 | 3 | 4 | 5 |
| 45.5 | This brand is consistent with how I would like others to see me. | 1 | 2 | 3 | 4 | 5 |

Following characteristics best describes about myself;

| | | | | | | |
|---|---|---|---|---|---|---|
| 46.1 | Down to earth | 1 | 2 | 3 | 4 | 5 |
| 46.2 | Honest | 1 | 2 | 3 | 4 | 5 |
| 46.3 | Wholesome | 1 | 2 | 3 | 4 | 5 |
| 46.4 | Cheerful | 1 | 2 | 3 | 4 | 5 |
| 46.5 | Daring | 1 | 2 | 3 | 4 | 5 |
| 46.6 | Spirited | 1 | 2 | 3 | 4 | 5 |
| 46.7 | Imaginative | 1 | 2 | 3 | 4 | 5 |
| 46.8 | Up to date | 1 | 2 | 3 | 4 | 5 |
| 46.9 | Reliable | 1 | 2 | 3 | 4 | 5 |
| 46.10 | Intelligence | 1 | 2 | 3 | 4 | 5 |
| 46.11 | Successful | 1 | 2 | 3 | 4 | 5 |
| 46.12 | Upper class | 1 | 2 | 3 | 4 | 5 |
| 46.13 | Charming | 1 | 2 | 3 | 4 | 5 |
| 46.14 | Outdoorsy | 1 | 2 | 3 | 4 | 5 |
| 46.15 | Tough | 1 | 2 | 3 | 4 | 5 |

This brand;

| | | | | | | |
|---|---|---|---|---|---|---|
| 47.1 | Is well known. | 1 | 2 | 3 | 4 | 5 |
| 47.2 | Is well established. | 1 | 2 | 3 | 4 | 5 |
| 47.3 | Suits for the purpose. | 1 | 2 | 3 | 4 | 5 |
| 47.4 | Is reasonably priced. | 1 | 2 | 3 | 4 | 5 |
| 47.5 | Can be obtained conveniently. | 1 | 2 | 3 | 4 | 5 |

**F. About information processing**

| | | | | | | |
|---|---|---|---|---|---|---|
| 48.1 | I can never seem to find the right word when I need it. | 1 | 2 | 3 | 4 | 5 |
| 48.2 | I often make written notes to myself. | 1 | 2 | 3 | 4 | 5 |
| 48.3 | I prefer to read instructions about how to do something rather than have someone to show me. | 1 | 2 | 3 | 4 | 5 |

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 48.4 | I think I often use the words in the wrong way. | 1 | 2 | 3 | 4 | 5 |
| 48.5 | I don't believe that anyone can think in terms of mental pictures. | 1 | 2 | 3 | 4 | 5 |
| 48.6 | I have better than average fluency in using words. | 1 | 2 | 3 | 4 | 5 |
| 48.7 | When I am trying to learn something new, I'd rather watch a demonstration than read how to do it. | 1 | 2 | 3 | 4 | 5 |
| 48.8 | I generally prefer to use a diagram rather than a written set of instructions. | 1 | 2 | 3 | 4 | 5 |
| 48.9 | I find it helps in terms of mental picture when doing many things. | 1 | 2 | 3 | 4 | 5 |
| 48.10 | When I have forgotten something I frequently try to form a mental "picture" to remember it. | 1 | 2 | 3 | 4 | 5 |
| 48.11 | My thinking often consists of mental pictures or images. | 1 | 2 | 3 | 4 | 5 |
| 48.12 | I can close my eyes and easily picture a scene that I have experienced. | 1 | 2 | 3 | 4 | 5 |

**G. Personal Information**

a. Ethnicity : ……..

b. Country of Birth : ……..

c. Age Category : 18-30 yrs ☐
31-45 yrs ☐
46-65 yrs ☐

d. Gender : …….

e. E-mail : …….

**Any comments?**

This questionnaire is being pre-tested. If you found some questions confusing or inappropriate, I would appreciate your comments and suggestions, if you can spare a few minutes to indicate this below?

Many thanks!

……

……

……

……

……

# Appendix 4.14: The survey questionnaire

Participant's Reference Code: …….

I very much appreciate your help with my research study on brand-related memories. Please answer the following questions. All answers will remain anonymous and at no point will you be identified in the analysis.

1. Thinking about your 'life time memories' (i.e. those personal, specific events about yourself that you can recall from the past, do you have any brands associated with these memories? An example of such memory is quoted below for more clarity;

   *"For my 18th B'day, I've got my first designer bag. This was a gift from my dad and it came through the post in the morning. He didn't hand it over to me because he was away. I got the delivery in the morning, I saw this big box, I was thinking…., what's in this and then I tried to open it, but I couldn't. I just took a knife and opened it. Then I saw the designer bag, it was a* ***Gucci*** *and I was really excited!!!. It was blue, gold and black leather, it felt great and I remember being on a real high!!"*

   *Your 'life-time' memories may be related to any of the following situations. Do not be restricted to these situations, you may have other examples.*
   - Playing with friends in childhood days.
   - Participating in a school concert or sports day.
   - Winning a competition or a sports event.
   - Relating to a shopping experience.
   - Receiving a birthday gift or Christmas gift.
   - General events such as dining with family.
   - Holiday memories.
   - First day at senior school, university or first job.
   - Relates to special occasions such as weddings, graduations etc.
   - Any disappointing incident.

   Do you have any brands associated with these memories?
   Yes ☐
   No ☐
   If 'Yes' please continue to question no. 2. If 'no' please end the survey and thank you very much for your intention to participate.

2. What is the brand name that is most associated with your personal memories (*as per the example in question1*)? Please write the brand name below together with one line description about the brand – related memory.

   Brand Name: ….…… Product Category: …….

   Memory Description (in one sentence):

   ……..…….…….

   ……..……

   ……..….

3. What was your age at that time? ……..…. years.

Of the brand and brand-related memory detailed above, please answer following questions;

*Please use the following scale to answer the subsequent statements.*
*Strongly Disagree* **1** *Disagree* **2** *No opinion* **3** *Agree* **4** *Strongly Agree* **5**

For example; If you select 2 as the answer, please fill in black colour or cross out (X) the relevant cage:- | 1 | **2** | 3 | 4 | 5 |

**A: About brand memory episodes**

| **When thinking about my memory surrounding this brand;** | | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 1. | I feel that I travelled back to the time when it happened. | 1 | 2 | 3 | 4 | 5 |
| 2. | I can actually remember it rather than just knowing that it happened. | 1 | 2 | 3 | 4 | 5 |
| 3. | I can remember the day (eg. Monday, 24th) when this brand memory event happened. | 1 | 2 | 3 | 4 | 5 |
| 4. | I can remember my age when this brand memory happened. | 1 | 2 | 3 | 4 | 5 |
| 5. | I can remember where this memory happened. | 1 | 2 | 3 | 4 | 5 |
| 6. | I can remember the detailed story of what happened. | 1 | 2 | 3 | 4 | 5 |
| 7. | I can recall the setting where it occurred. | 1 | 2 | 3 | 4 | 5 |
| 8. | I cannot remember people involved in this memory event. | 1 | 2 | 3 | 4 | 5 |
| 9. | I can remember the packaging of the brand. | 1 | 2 | 3 | 4 | 5 |
| 10. | I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur. | 1 | 2 | 3 | 4 | 5 |
| **When recalling this memory experience;** | | | | | | |
| 11. | I feel happy. | 1 | 2 | 3 | 4 | 5 |
| 12. | I feel as though I am reliving it. | 1 | 2 | 3 | 4 | 5 |
| 13. | I feel the same particular emotions I felt at the time of the event. | 1 | 2 | 3 | 4 | 5 |
| 14. | I feel that I see it out of my own eyes rather than that of an outside observer. | 1 | 2 | 3 | 4 | 5 |
| 15. | I felt this brand memory was very good. | 1 | 2 | 3 | 4 | 5 |
| 16. | I felt very enjoyable. | 1 | 2 | 3 | 4 | 5 |
| 17. | The emotions are negative. | 1 | 2 | 3 | 4 | 5 |
| 18. | It comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | 1 | 2 | 3 | 4 | 5 |
| 19. | I can see it in my mind. | 1 | 2 | 3 | 4 | 5 |
| 20. | I can hear it in my mind. | 1 | 2 | 3 | 4 | 5 |
| 21. | I can picture the brand. | 1 | 2 | 3 | 4 | 5 |
| 22. | The images that come to mind is vivid. | 1 | 2 | 3 | 4 | 5 |
| 23. | The images that come to mind is clear. | 1 | 2 | 3 | 4 | 5 |
| 24. | The images that come to mind is well defined. | 1 | 2 | 3 | 4 | 5 |
| **This memory event;** | | | | | | |
| 25. | Is important to me. | 1 | 2 | 3 | 4 | 5 |
| 26. | Is not a significant memory to me. | 1 | 2 | 3 | 4 | 5 |
| 27. | Makes me feel positive towards the brand. | 1 | 2 | 3 | 4 | 5 |
| 28. | Is not worth remembering. | 1 | 2 | 3 | 4 | 5 |
| 29. | Because of this event, this brand is sentimental to me. | 1 | 2 | 3 | 4 | 5 |

**B: About Brand Image**

| **This brand** | | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 30.1 | Is trustworthy. | 1 | 2 | 3 | 4 | 5 |
| 30.2 | Is of excellent quality. | 1 | 2 | 3 | 4 | 5 |
| 30.3 | Has consistent quality. | 1 | 2 | 3 | 4 | 5 |
| 30.4 | Gives the best value for money. | 1 | 2 | 3 | 4 | 5 |
| 30.5 | Is well known. | 1 | 2 | 3 | 4 | 5 |
| 30.6 | Is well established. | 1 | 2 | 3 | 4 | 5 |
| 30.7 | Suits for the purpose. | 1 | 2 | 3 | 4 | 5 |
| 30.8 | Is reasonably priced. | 1 | 2 | 3 | 4 | 5 |
| 30.9 | Can be obtained conveniently. | 1 | 2 | 3 | 4 | 5 |
| 30.10 | Is widely available. | 1 | 2 | 3 | 4 | 5 |
| 30.11 | Is prestigious. | 1 | 2 | 3 | 4 | 5 |
| 30.12 | Is distinctive. | 1 | 2 | 3 | 4 | 5 |
| 30.13 | Makes a statement. | 1 | 2 | 3 | 4 | 5 |
| 30.14 | Is totally in line with my life style. | 1 | 2 | 3 | 4 | 5 |
| 30.15 | Is a social status symbol. | 1 | 2 | 3 | 4 | 5 |
| 30.16 | Has a good reputation. | 1 | 2 | 3 | 4 | 5 |
| 30.17 | Is the brand leader. | 1 | 2 | 3 | 4 | 5 |
| 30.18 | Makes me feel good. | 1 | 2 | 3 | 4 | 5 |
| 30.19 | Gives me pleasure. | 1 | 2 | 3 | 4 | 5 |
| 30.20 | Is the brand that I feel relaxed about using. | 1 | 2 | 3 | 4 | 5 |
| 30.21 | Reminds me of the past. | 1 | 2 | 3 | 4 | 5 |
| 30.22 | Helps me recall pleasant memories. | 1 | 2 | 3 | 4 | 5 |
| 30.23 | Makes me feel nostalgic. | 1 | 2 | 3 | 4 | 5 |
| 30.24 | Makes me reminisce (recall) about a previous time. | 1 | 2 | 3 | 4 | 5 |
| 30.25 | Makes me thinks about when I was younger. | 1 | 2 | 3 | 4 | 5 |
| 30.26 | Evokes fond memories. | 1 | 2 | 3 | 4 | 5 |
| 30.27 | Brings back memories of good times from the past. | 1 | 2 | 3 | 4 | 5 |
| **This brand has the following characteristics;** | | | | | | |
| 31.1 | Down to earth | 1 | 2 | 3 | 4 | 5 |
| 31.2 | Honest | 1 | 2 | 3 | 4 | 5 |
| 31.3 | Wholesome | 1 | 2 | 3 | 4 | 5 |
| 31.4 | Cheerful | 1 | 2 | 3 | 4 | 5 |
| 31.5 | Daring | 1 | 2 | 3 | 4 | 5 |
| 31.6 | Spirited | 1 | 2 | 3 | 4 | 5 |
| 31.7 | Imaginative | 1 | 2 | 3 | 4 | 5 |
| 31.8 | Up to date | 1 | 2 | 3 | 4 | 5 |
| 31.9 | Reliable | 1 | 2 | 3 | 4 | 5 |
| 31.10 | Intelligence | 1 | 2 | 3 | 4 | 5 |
| 31.11 | Successful | 1 | 2 | 3 | 4 | 5 |
| 31.12 | Upper class | 1 | 2 | 3 | 4 | 5 |
| 31.13 | Charming | 1 | 2 | 3 | 4 | 5 |
| 31.14 | Outdoorsy | 1 | 2 | 3 | 4 | 5 |
| 31.15 | Tough | 1 | 2 | 3 | 4 | 5 |

**C: About Brand Familiarity, Knowledge, Attitude and Purchase Intention**

| | | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 32.1 | I am well aware of this brand. | 1 | 2 | 3 | 4 | 5 |
| 32.2 | This brand is not familiar to me. | 1 | 2 | 3 | 4 | 5 |
| 32.3 | My knowledge about this brand is very strong. | 1 | 2 | 3 | 4 | 5 |
| 32.4 | I have known about this brand for many years. | 1 | 2 | 3 | 4 | 5 |
| 32.5 | I know what the brand image is. | 1 | 2 | 3 | 4 | 5 |
| 33.1 | I like this brand. | 1 | 2 | 3 | 4 | 5 |
| 33.2 | This is a desirable brand to me. | 1 | 2 | 3 | 4 | 5 |
| 33.3 | I always buy this brand in this product category. | 1 | 2 | 3 | 4 | 5 |
| 33.4 | This is my favourite brand in the product category. | 1 | 2 | 3 | 4 | 5 |
| 33.5 | The next brand I buy in this product category will be this one. | 1 | 2 | 3 | 4 | 5 |
| 33.6 | This is a good brand for me. | 1 | 2 | 3 | 4 | 5 |
| 33.7 | I have bought this brand for many years. | 1 | 2 | 3 | 4 | 5 |
| 33.8 | I will continue purchasing this brand. | 1 | 2 | 3 | 4 | 5 |
| 33.9 | To me this brand is the best choice in this product category. | 1 | 2 | 3 | 4 | 5 |
| 33.10 | I consider myself a loyal customer of this brand. | 1 | 2 | 3 | 4 | 5 |

**D. About involvement, influences, trust, commitment and relationship**

| | | | | | | |
|---|---|---|---|---|---|---|
| 34.1 | I have a strong interest in this brand. | 1 | 2 | 3 | 4 | 5 |
| 34.2 | I attach great importance to this brand. | 1 | 2 | 3 | 4 | 5 |
| 34.3 | I do not enjoy buying this brand. | 1 | 2 | 3 | 4 | 5 |
| 34.4 | Buying this brand helps me express my personality. | 1 | 2 | 3 | 4 | 5 |
| 34.5 | I can tell a lot about a person by the brand she/he buys. | 1 | 2 | 3 | 4 | 5 |
| 34.6 | This brand has never disappointed me. | 1 | 2 | 3 | 4 | 5 |
| 34.7 | This brand guarantees satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 34.8 | This brand has met my expectations. | 1 | 2 | 3 | 4 | 5 |
| **I purchase this brand because;** | | | | | | |
| 34.9 | My friends like this brand. | 1 | 2 | 3 | 4 | 5 |
| 34.10 | Others do not like this. | 1 | 2 | 3 | 4 | 5 |
| 34.11 | It makes a good impression on me. | 1 | 2 | 3 | 4 | 5 |
| **I often;** | | | | | | |
| 34.12 | Observe what others buy and use the information to make sure I buy the right brand. | 1 | 2 | 3 | 4 | 5 |
| 34.13 | Ask my friends about brands they use when I have little experience. | 1 | 2 | 3 | 4 | 5 |
| 34.14 | Consult other people to help choose the best alternative available from the product class. | 1 | 2 | 3 | 4 | 5 |
| 34.15 | Gather information from friends or family about a brand before I buy. | 1 | 2 | 3 | 4 | 5 |
| 34.16 | Trust this brand. | 1 | 2 | 3 | 4 | 5 |
| 34.17 | Rely in this brand. | 1 | 2 | 3 | 4 | 5 |
| 35.1 | I would recommend this brand to others in the future. | 1 | 2 | 3 | 4 | 5 |

| | | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 35.2 | I consider myself to be highly loyal to this brand. | 1 | 2 | 3 | 4 | 5 |
| 35.3 | When another brand is on sale, I will generally purchase it rather than my usual brand. | 1 | 2 | 3 | 4 | 5 |
| 35.4 | I stick with this brand because I know it is the best for me. | 1 | 2 | 3 | 4 | 5 |
| 35.5 | I would be proud to tell others that I use this brand. | 1 | 2 | 3 | 4 | 5 |
| 35.7 | I identify with the brand. | 1 | 2 | 3 | 4 | 5 |
| 35.8 | I feel emotionally attached to the brand. | 1 | 2 | 3 | 4 | 5 |
| 35.9 | I am committed to this brand. | 1 | 2 | 3 | 4 | 5 |
| 35.10 | Over the years, I have bought the same brand. | 1 | 2 | 3 | 4 | 5 |
| | **This brand;** | | | | | |
| 36.1 | Is the brand my family members used/bought. | 1 | 2 | 3 | 4 | 5 |
| 36.2 | Reminds me of a happy childhood time. | 1 | 2 | 3 | 4 | 5 |
| 36.3 | Gives me comfort/security of my past life. | 1 | 2 | 3 | 4 | 5 |
| 36.4 | Has given me a positive experience. | 1 | 2 | 3 | 4 | 5 |
| 36.5 | Has given me a negative experience. | 1 | 2 | 3 | 4 | 5 |
| 36.6 | Is my own choice. | 1 | 2 | 3 | 4 | 5 |
| 36.7 | I do not use this brand very frequently. | 1 | 2 | 3 | 4 | 5 |
| 36.8 | I use this brand only in special occasions. | 1 | 2 | 3 | 4 | 5 |
| 36.9 | I do not have high expectations about this brand. | 1 | 2 | 3 | 4 | 5 |
| 36.10 | I am attached to this brand because I had negative experience with the previous brand. | 1 | 2 | 3 | 4 | 5 |
| 36.11 | I initially used this brand in the trial period. | 1 | 2 | 3 | 4 | 5 |
| 36.12 | I am very dependent on this brand. | 1 | 2 | 3 | 4 | 5 |
| 36.13 | Others have influenced (imposed) me to buy/use this brand. | 1 | 2 | 3 | 4 | 5 |

**E. About yourself**

| **This brand;** | | | | | | |
|---|---|---|---|---|---|---|
| 37.1 | Is consistent with how I see myself. | 1 | 2 | 3 | 4 | 5 |
| 37.2 | Reflects who I am. | 1 | 2 | 3 | 4 | 5 |
| 37.3 | Is consistent with how others see me. | 1 | 2 | 3 | 4 | 5 |
| 37.4 | Is used by people similar to me. | 1 | 2 | 3 | 4 | 5 |
| 37.5 | Is consistent with how I would like others to see me. | 1 | 2 | 3 | 4 | 5 |
| **Following characteristics best describes about myself;** | | | | | | |
| 37.6 | Down to earth | 1 | 2 | 3 | 4 | 5 |
| 37.7 | Honest | 1 | 2 | 3 | 4 | 5 |
| 37.8 | Wholesome | 1 | 2 | 3 | 4 | 5 |
| 37.9 | Cheerful | 1 | 2 | 3 | 4 | 5 |
| 37.10 | Daring | 1 | 2 | 3 | 4 | 5 |
| 37.11 | Spirited | 1 | 2 | 3 | 4 | 5 |
| 37.12 | Imaginative | 1 | 2 | 3 | 4 | 5 |
| 37.13 | Up to date | 1 | 2 | 3 | 4 | 5 |
| 37.14 | Reliable | 1 | 2 | 3 | 4 | 5 |
| 37.15 | Intelligence | 1 | 2 | 3 | 4 | 5 |
| 37.16 | Successful | 1 | 2 | 3 | 4 | 5 |
| 37.17 | Upper class | 1 | 2 | 3 | 4 | 5 |
| 37.18 | Charming | 1 | 2 | 3 | 4 | 5 |
| 37.19 | Outdoorsy | 1 | 2 | 3 | 4 | 5 |
| 37.20 | Tough | 1 | 2 | 3 | 4 | 5 |

**F. About information processing**

| | | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 38.1 | I can never seem to find the right word when I need it. | 1 | 2 | 3 | 4 | 5 |
| 38.2 | I often make written notes to myself. | 1 | 2 | 3 | 4 | 5 |
| 38.3 | I prefer to read instructions about how to do something rather than have someone to show me. | 1 | 2 | 3 | 4 | 5 |
| 38.4 | I think I often use the words in the wrong way. | 1 | 2 | 3 | 4 | 5 |
| 38.5 | I do not believe that anyone can think in terms of mental pictures. | 1 | 2 | 3 | 4 | 5 |
| 38.6 | I have better than average fluency in using words. | 1 | 2 | 3 | 4 | 5 |
| 38.7 | When I am trying to learn something new, I would rather watch a demonstration than read how to do it. | 1 | 2 | 3 | 4 | 5 |
| 38.8 | I generally prefer to use a diagram rather than a written set of instructions. | 1 | 2 | 3 | 4 | 5 |
| 38.9 | I find it helps in terms of mental picture when doing many things. | 1 | 2 | 3 | 4 | 5 |
| 38.10 | When I have forgotten something I frequently try to form a mental "picture" to remember it. | 1 | 2 | 3 | 4 | 5 |
| 38.11 | My thinking often consists of mental pictures or images. | 1 | 2 | 3 | 4 | 5 |
| 38.12 | I can close my eyes and easily picture a scene that I have experienced. | 1 | 2 | 3 | 4 | 5 |

**G. Personal Information**

a. Ethnicity : ……..

b. Country of Birth : ……..

c. Age Category : 18-30 yrs ☐

31-45 yrs ☐

46-65 yrs ☐

d. Gender : …….

e. E-mail : …….

# Appendix 4.15: Test of normality

An assumption of Confirmatory Factor Analysis and Structural Equation Modelling is that observed variables are normally distributed. Thus, detailed of skewness and kurtosis of individual variables were investigated to test the univariate normality are shown below. Table 8-1 depicts Z values of skewness and kurtosis of individual variables used in the Confirmatory Factor Analysis with a sample of 153 while Table 8-2 depicts Z values of skewness and kurtosis of individual variables used in the Structural Equation Modelling with a sample of 303.

Table 8-1: Skewness and kurtosis of individual variables in the CFA

| **Independent Variables** | **Skewness** | **Kurtosis** |
|---|---|---|
| **BRAM Attributes** | | |
| **Specificity** | | |
| SPE1 | -2.18 | -1.25 |
| SPE2 | -1.89 | -2.66 |
| SPE4 | -4.02 | -1.41 |
| SPE6 | -2.22 | -1.28 |
| **Vividness** | | |
| VIVI1 | -2.12 | -1.35 |
| VIVI6 | -2.46 | -1.12 |
| VIVI8 | -1.61 | -1.23 |
| **Affect** | | |
| AFF3 | -1.89 | -1.37 |
| AFF7 | -2.49 | -1.20 |
| AFF8 | -1.80 | -0.81 |
| AFF10 | -1.15 | -0.22 |

| **Moderating Variables** | | |
|---|---|---|
| **BRSM** | | |
| KNOW1 | -1.44 | 0.11 |
| KNOW2 | -1.87 | -1.19 |
| KNOW3 | -1.25 | -0.51 |
| KNOW4 | -1.04 | 0.25 |
| KNOW5 | -0.78 | 0.63 |
| **Self-Brand Congruence** | | |
| SC1 | -2.24 | -1.25 |
| SC2 | -1.38 | 0.13 |
| SC3 | -3.22 | -1.08 |
| SC4 | -1.36 | -0.92 |
| SC5 | -1.58 | -2.89 |
| **Dependent Variable** | | |
| **AFBC** | | |
| BBC1 | -0.39 | -0.53 |
| BBC3 | -1.29 | -0.24 |
| AFFBC2 | -1.15 | -0.18 |
| AFFBC3 | -1.60 | -0.67 |
| AFFBC4 | -1.30 | -0.24 |

Although a value of 0 corresponds to the perfect normality in data distribution, West, Finch and Curran (1995) posits that this rarely achieved in social science research. As Hair et al (1998), a value of +/- 2.58 is the cut-off point for rejecting the normality assumption at the 0.01 error level, and +/- 1.96 is the cut-off point for rejecting the assumption at the 0.05 error level.

As the above Table 8-1 shows only 2 items (1 item each from BRAM attributes and SBC) out of 23 variables for depart from normality for skewness (i.e not within +/- 2.58 range while 2 items (1 item each from BRAM attributes and SBC) Depart from normality for kurtosis. The highest z-value for skewness is -4.02 while the highest Z- value for kurtosis is -2.89.

Table 8-2: Skewness and kurtosis of individual variables in the SEM

| **Independent Variables** | **Skewness** | **Kurtosis** |
|---|---|---|
| **BRAM Attributes** | | |
| **Specificity** | | |
| SPE1 | -3.09 | -1.98 |
| SPE2 | -2.01 | -2.22 |
| SPE6 | -4.47 | -2.55 |
| VIVI6 | -4.18 | -2.60 |
| **Vividness** | | |
| VIVI1 | -2.74 | -1.88 |
| AFF3 | -2.71 | -2.25 |
| **Affect** | | |
| VIVI8 | -2.52 | -2.37 |
| AFF7 | -2.89 | -1.22 |
| AFF8 | -2.54 | -1.81 |
| AFF10 | -1.34 | 0.024 |
| **Moderating Variables** | | |
| **BRSM** | | |
| KNOW1 | -2.03 | -0.09 |
| KNOW2 | -2.64 | -1.95 |
| KNOW3 | -2.15 | -1.67 |
| KNOW4 | -1.45 | 0.17 |
| KNOW5 | -1.40 | -0.35 |
| **Self-Brand Congruence** | | |
| SC1 | -3.95 | -1.78 |
| SC2 | -2.20 | -0.47 |
| SC4 | -2.72 | -2.02 |
| SC5 | -3.32 | -3.61 |
| **Dependent Variable** | | |
| **Affective Brand Commitment** | | |
| BBC1 | -3.18 | -2.06 |
| AFFBC2 | -2.21 | -2.05 |
| AFFBC3 | -2.73 | -1.60 |
| AFFBC4 | -3.32 | -1.83 |

As per the above Table, 12 items out of total 23 items used in the SEM are not within the range of +/-2.58 departing from normality for skewness while 2 items depart from normality for kurtosis. The highest z-value for skewness is -4.47 while the highest Z- value for kurtosis is -3.61.

# Appendix 5.1: BRAM attributes - measure purification

This Appendix reports the purification of the three BRAM attributes; Specificity, Vividness and Affect. As discussed in Chapter 4 (Section 4.5.6), internal consistency, reliability and unidimensionality were investigated for all three BRAM attributes separately and then simultaneously. This process is discussed below in detail.

**Step 1: Reliability assessment**

In order to measure the attributes of BRAM, three dimensions were included in the study having 9 items for specificity, 9 items for vividness and 11 items for affect. Initially the mean, standard deviation and was assessed for each item and is given in Table 8-3. Then the reliability of the items were assessed through the inter-item correlation, corrected item-total correlation and assessing the coefficient alpha before proceeding to the next stage.

Table 8-3: Items, Mean and standard deviation of Specificity, Vividness and Affect

| Label | Item | Mean | Standard Deviation |
|---|---|---|---|
| **Dimension :Specificity** | | | |
| SPE1 | I feel that I travelled back to the time when it happened. | 4.100 | 0.9465 |
| SPE2 | I can actually remember it rather than just knowing that it happened. | 4.600 | 0.4915 |
| SPE3 | I can remember the day (eg. Monday, 24$^{th}$) when this brand memory event happened. | 3.360 | 1.3770 |
| SPE4 | I can remember my age when this brand memory happened. | 4.600 | 0.4915 |

| | | | |
|---|---|---|---|
| SPE5 | I can remember where this memory happened. | 4.700 | 0.4597 |
| SPE6 | I can remember the detailed story of what happened. | 4.500 | 0.5016 |
| SPE7 | I can recall the setting where it occurred. | 4.500 | 0.5017 |
| SPE8 | I cannot remember people involved in this memory event. (RC) | 3.920 | 1.1323 |
| SPE9 | I can remember the packaging of the brand. | 4.300 | 0.4598 |
| **Dimension : Vividness** | | | |
| VIVI1 | I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur. | 4.400 | 0.4915 |
| VIVI2 | I feel that I see it out of my own eyes rather than that of an outside observer. | 3.300 | 1.3498 |
| VIVI3 | It comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene. | 3.293 | 1.1024 |
| VIVI4 | I can see it in my mind. | 4.693 | 0.4626 |
| VIVI5 | I can hear it in my mind. | 2.306 | 1.2794 |
| VIVI6 | I can picture the brand. | 4.506 | 0.5016 |
| VIVI7 | The images that come to mind is vivid. | 4.387 | 0.5021 |
| VIVI8 | The images that come to mind is clear. | 4.393 | 0.5036 |
| VIVI9 | The images that come to mind is well defined. | 4.107 | 0.8366 |
| **Dimension : Affect** | | | |
| AFF1 | I feel happy. | 4.200 | 0.4013 |
| AFF2 | I feel as though I am reliving it. | 2.800 | 0.9831 |
| AFF3 | I feel the same particular emotions I felt at the time of the event. | 2.900 | 0.9465 |
| AFF4 | I felt this brand memory was very good. | 4.307 | 0.4626 |
| AFF5 | I felt very enjoyable. | 3.913 | 0.3495 |
| AFF6 | The emotions are negative. | 4.713 | 0.6275 |
| AFF7 | Is important to me. | 3.000 | 1.1871 |
| AFF8 | Is not a significant memory to me (RC). | 3.300 | 1.3498 |
| AFF9 | Makes me feel positive towards the brand. | 4.200 | 0.4013 |
| AFF10 | Is not worth remembering (RC). | 4.000 | 1.0033 |
| AFF11 | Because of this event, this brand is sentimental to me. | 3.566 | 1.1257 |

In assessing the reliability of BRAM dimensions, Cronbach's Alpha, inter-item correlations and corrected total item correlations were examined before proceeding to the unidimensionality explorations (EFA). Although items that showed the inter-item correlations below 0.3 and corrected item-total correlation below 0.4 were eliminated from further analysis, in exceptional situations where a high reliability of Cronbach's Alpha was above 0.8, those items were retained for the next level analysis. As shown in Table 8-4, a high reliability of 0.822 Cronbach's Alpha was shown for the 6 items to measure Specificity after the removal of 2 items at this stage (SPE8 and SPE9).

Table 8-4: Reliability assessment of Specificity

| Specificity : Cronbach's Alpha 0.822 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Inter-Item Correlation Matrix | | | | | | Corrected Item-Total Correlation |
| | SPE1 | SPE2 | SPE4 | SPE5 | SPE6 | SPE7 | |
| SPE1 | 1.000 | .519 | .736 | .301 | .530 | .530 | .707 |
| SPE2 | .519 | 1.000 | .583 | .356 | .408 | .408 | .600 |
| SPE4 | .736 | .583 | 1.000 | .356 | .816 | .408 | .815 |
| SPE5 | .301 | .356 | .356 | 1.000 | .218 | .655 | .460 |
| SPE6 | .530 | .408 | .816 | .218 | 1.000 | .200 | .578 |
| SPE7 | .530 | .408 | .408 | .655 | .200 | 1.000 | .578 |

For Vividness, three items were removed (VIVI2, VIVI3, VIVI5) to reach a Cronbach's Alpha of 0.847 and all 6 items given in Table 8-5 were considered for the initial EFA.

Table 8-5:Reliability assessment of Vividness

| Vividness : Cronbach's Alpha 0.847 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Inter-Item Correlation Matrix | | | | | | Corrected Item-Total Correlation |
| | VIVI1 | VIVI4 | VIVI6 | VIVI7 | VIVI8 | VIVI9 | |
| VIVI1 | 1.000 | .425 | .697 | .375 | .770 | .499 | .707 |
| VIVI4 | .425 | 1.000 | .645 | .543 | .550 | .068 | .497 |
| VIVI6 | .697 | .645 | 1.000 | .389 | .773 | .606 | .815 |
| VIVI7 | .375 | .543 | .389 | 1.000 | .615 | .364 | .557 |
| VIVI8 | .770 | .550 | .773 | .615 | 1.000 | .601 | .873 |
| VIVI9 | .499 | .068 | .606 | .364 | .601 | 1.000 | .532 |

Table 8-6 demonstrates a reliability of 0.899 Cronbach's Alpha for 8 items of the Affect attribute after the removal of 3 items (AFF4, AFF5 and AFF6). All these items were considered for the initial EFA.

Table 8-6:Reliability assessment of Affect

| Affect : Cronbach's Alpha 0.899 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Inter-Item Correlation Matrix | | | | | | | | Corrected Item-Total Correlation |
| | AFF1 | AFF2 | AFF3 | AFF7 | AFF8 | AFF9 | AFF10 | AFF11 | |
| AFF1 | 1.000 | .612 | .318 | .211 | .632 | .375 | .500 | .312 | .520 |
| AFF2 | .612 | 1.000 | .736 | .431 | .652 | .357 | .714 | .412 | .693 |
| AFF3 | .318 | .736 | 1.000 | .717 | .654 | .318 | .742 | .450 | .754 |
| AFF7 | .211 | .431 | .717 | 1.000 | .817 | .634 | .676 | .613 | .777 |
| AFF8 | .632 | .652 | .654 | .817 | 1.000 | .632 | .892 | .585 | .902 |
| AFF9 | .375 | .357 | .318 | .634 | .632 | 1.000 | .500 | .550 | .614 |
| AFF10 | .500 | .714 | .742 | .676 | .892 | .500 | 1.000 | .481 | .849 |
| AFF11 | .312 | .412 | .450 | .613 | .585 | .550 | .481 | 1.000 | .605 |

For above three measures, a high reliability above 0.8 was shown against the accepted Cronbach's Alpha of 0.65 (Sekaran 2003; Malhothra 2008), and these items were considered for the initial factor analysis.

**Step 2: Exploratory Factor Analysis (EFA)**

EFA was conducted on the above items to explore the dimensionality of BRAM attributes. Different statistics were considered in this process, and are discussed sequentially in this section. Initially unidimensionality was assessed for each attribute and then simultaneously for all three attributes.

Sample adequacy was tested using Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-test) and as Field (2000, p. 446) and Hutcheson and Sofroniou (1999), the value should be greater than 0.5. The multicollinearity of dimensions were examined through the determinant of the R-matrix and as Field (2000, p.445) recommended, the determinant to be greater than 0.00001 to avoid the multicollinearity of data. Factor loading should also be above 0.45 to be accepted.

**EFA: Specificity**

Initially 5 items remained from previous analysis (excluding SPE7 due to weak correlation) was included in the exploratory analysis of specificity and the results are given in Table 8-7 below. Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 60.10% of the total variance. The loading of all 5 items was well above 0.45.

Table 8-7: Initial EFA-Specificity

| Item | Factor Loading |
|---|---|
| SPE1 | .823 |
| SPE2 | .739 |
| SPE4 | .935 |
| SPE6 | .804 |
| SPE5 | .509 |
| Total variance explained 60.104% | |
| Extraction Method: Principal Component Analysis. a. 1components extracted.<br>Kaiser-Meyer-Olkin Measure of Sampling Adequacy 0.721<br>Bartlett's Test of Sphericity = 374.376 df 10 p=.000 | |

**EFA: Vividness**

All 6 items remained from previous analysis was included in the exploratory analysis of vividness and the results are given in Table 8-8 below. Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 61.698% of the total variance. The loading of all 6 items was well above 0.45.

Table 8-8: Initial EFA - Vividness

| Item | Factor Loading |
|---|---|
| VIVI8 | .930 |
| VIVI6 | .888 |
| VIVI1 | .820 |
| VIVI4 | .684 |
| VIVI7 | .681 |
| VIVI9 | .667 |
| Total variance explained 61.698% | |
| Extraction Method: Principal Component Analysis. a. 1components extracted.<br>Kaiser-Meyer-Olkin Measure of Sampling Adequacy 0.644<br>Bartlett's Test of Sphericity = 624.748 df 15 p=.000 | |

**EFA: Affect**

After eliminating 1 item (AFF1) due to weak correlation of 0.211, all other 7 items remained from previous analysis was included in the exploratory analysis of vividness and the results are given in Table 8-9 below. Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 66.243% of the total variance. The loading of all 7 items was well above 0.45.

Table 8-9: Initial EFA - Affect

| Item | Factor Loading |
|---|---|
| AFF8 | .931 |
| AFF10 | .894 |
| AFF7 | .866 |
| AFF3 | .821 |
| AFF2 | .759 |
| AFF11 | .706 |
| AFF9 | .688 |
| AFF8 | .931 |
| Total variance explained 66.243% | |
| Extraction Method: Principal Component Analysis. a. 1components extracted.<br>Kaiser-Meyer-Olkin Measure of Sampling Adequacy 0.648<br>Bartlett's Test of Sphericity = 975.640 df 21 p=.000 | |

**Step 3: Simultaneous EFA analysis of BRAM attributes**

In the simultaneous analysis, correlation matrix was investigated for extreme multicollinearity (above 0.9) and singularity (below 0.3) in addition to the Bartlett's Test of spherity. Also the sample adequacy was tested via KMO test. Taking account of all these and considering the cross loaded items, 3 items (AFF2, VIVI7 and SPE7) were removed from further analysis. Finally, 4 items of Specificity (SPE4, SPE1, SPE6 and SPE2), 3 items of Vividness (VIVI8, VIVI6, and VIVI1) and 4 items of Affect (AFF7, AFF3, AFF8 and AFF10) were retained at the purification stage that was carried out to the Confirmatory Factor Analysis (CFA) stage, and relevant statistics are shown in Table 8-10 (page 447).

The sample adequacy was 0.623 with the sample used (n=150) 0.05 significance level. The determinant of the R-matrix reported a value of 1.23E- 005 (greater

than 0.00001) and therefore multicollinearity is not a problem. The total variance explained for the three factors was 80.666% with this data for further analysis.

Table 8-10: Factor analysis of BRAM attributes

| | Component Matrix | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| AFF7 | .906 | | |
| AFF8 | .897 | | |
| AFF10 | .835 | | |
| AFF3 | .814 | | |
| SPE4 | | .937 | |
| SPE6 | | .861 | |
| SPE1 | | .794 | |
| SPE2 | | .581 | |
| VIVI8 | | | .940 |
| VIVI1 | | | .889 |
| VIVI6 | | | .876 |
| Extraction Method: Principal Component Analysis.<br>Rotation Method: Varimax with Kaiser Normalization.<br>a. Rotation converged in 5 iterations. | | | |
| Total variance explained 80.666%<br>Kaiser-Meyer-Olkin Measure of Sampling Adequacy - 0.623.<br>Bartlett's Test of Sphericity = 1634.045 df 55 p=.000<br>Determinant = 1.23E- 005 | | | |

# Appendix 5.2: Brand commitment - measure purification

This Appendix reports the purification of the items relevant to brand commitment. As discussed in Chapter 4 (Section 4.5.6), internal consistency, reliability and unidimensionality were investigated for items relevant to brand commitment. This process is discussed below in detail.

**Step1: Reliability assessment**

Initially, the mean and standard deviation as assessed for all 9 items relevant to brand commitment is given in the Table 8-11. Then the reliability of the items were assessed through the inter-item correlation, corrected item-total correlation and assessing the coefficient alpha before proceeding to the next stage.

Table 8-11: Items, mean and standard deviation of AFBC related items

| Label | Item | Mean | Standard Deviation |
|---|---|---|---|
| ATBC1 | I would recommend this brand to others in the future. | 3.8733 | .97138 |
| BBC1 | I consider myself to be highly loyal to this brand. | 3.2533 | 1.10634 |
| BBC2 | When another brand is on sale, I will generally purchase it rather than my usual brand (RC). | 3.1467 | .93684 |
| BBC3 | I stick with this brand because I know it is the best for me. | 3.1867 | 1.20060 |
| ATBC2 | I would be proud to tell others that I use this brand. | 3.6733 | .93763 |
| AFFBC1 | I identify with the brand. | 3.6667 | .91715 |
| AFFBC2 | I feel emotionally attached to the brand. | 3.1867 | 1.18936 |
| AFFBC3 | I am committed to this brand. | 3.1200 | 1.16964 |
| AFFBC4 | Over the years, I have bought the same brand. | 3.2013 | 1.18538 |

In assessing the reliability of AFBC, Cronbatch's Alpha, inter-item correlations and corrected total item correlations were examined before proceeding to the unidimensionality explorations (EFA). As shown in Table 8-12, a high reliability of 0.865 Cronbatch's Alpha was shown for the 5 items to measure the specificity after the removal of 4 items.

Table 8-12: Reliability assessment of AFBC

| Cronbach's Alpha 0.865 | | | | | | |
|---|---|---|---|---|---|---|
| | Inter-Item Correlation Matrix | | | | | Corrected Item-Total Correlation |
| | BBC1 | BBC3 | AFFBC2 | AFFBC3 | AFFBC4 | |
| BBC1 | 1.000 | .434 | .433 | .464 | .320 | .480 |
| BBC3 | .434 | 1.000 | .610 | .696 | .607 | .727 |
| AFFBC2 | .433 | .610 | 1.000 | .775 | .594 | .752 |
| AFFBC3 | .464 | .696 | .775 | 1.000 | .643 | .817 |
| AFFBC4 | .320 | .607 | .594 | .643 | 1.000 | .661 |

**Step 2: Exploratory Factor Analysis (EFA)**

EFA was conducted on the above items to explore the unidimensionality of items. Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 65.38% of the total variance. The loading of all 5 items was well above 0.45. EFA results are given in Table 8-13 below.

Table 8-13: EFA -AFBC

| Item | Factor Loading |
|---|---|
| BBC1 | .621 |
| BBC3 | .839 |
| AFFBC2 | .859 |
| AFFBC3 | .902 |
| AFFBC4 | .793 |
| Total variance explained 65.384% | |
| Extraction Method: Principal Component Analysis. a. 1components extracted.<br>Kaiser-Meyer-Olkin Measure of Sampling Adequacy 0.844<br>Bartlett's Test of Sphericity = 369.439 df 21 p=.000<br>Determinant = 0.079 | |

# Appendix 6.1: Interview results – SM-associated brands

Following brands were recalled without being associated with any life-time autobiographical event.

| | **Brand** | **Context free Brand attributes** |
|---|---|---|
| 1. | Addidas | Better quality |
| 2. | Audi | Robust , reliable, prestigious |
| 3. | Bird's custard | Quality |
| 4. | BMW | Luxury ,comfort, reasonable price |
| 5. | Chanel | Nice fragrance, long lasting |
| 6. | Clarks | Comfortable, not too pricy, durable |
| 7. | Colgate | Wider range available - anything tooth related<br>Quality<br>Mild taste<br>Whitening |
| 8. | Deso | Cheap, nice fragrance<br>Right fit |
| 9. | Dorothy Perkins | Comfort, right fit and nice designs |
| 10. | Dove | Mild<br>Moisturising effect |
| 11. | Evian | Taste |
| 12. | Fiat | Affordable, small size and specifications |
| 13. | Garnier | Expensive, No irritation |
| 14. | Gillette | Long lasting |
| 15. | Heinz baked beans | Taste<br>More beans, less sauce |
| 16. | Home Base | Pick whole stuff from one location |
| 17. | Honda | Reliable ,comfort |
| 18. | Hovis | Better taste |
| 19. | HP sauce | Good taste |
| 20. | Johnson and Johnson | Mild and doesn't cause skin allergy |
| 21. | Kenco | Better taste |
| 22. | Levis | Long lasting ,comfortable |
| 23. | Lucozade | Energy |

| | | |
|---|---|---|
| 24. | M & S | Quality and style<br>Good quality |
| 25. | Mac | Modern, fashionable |
| 26. | Mars | Right taste |
| 27. | McVities | Better quality and taste |
| 28. | Maybelline | Cheap, stays on |
| 29. | Mercedes | Reliable, reputation appearance |
| 30. | Nescafe coffee | Good quality, good flavour |
| 31. | Next | Nice designs, long lasting |
| 32. | Nike | Cool, prestigious<br>Brilliant designs |
| 33. | Nokia | Best quality<br>User friendliness, easy options |
| 34. | O2 | Price and quality reasonable |
| 35. | Oasis Principles | Durable, good fit |
| 36. | Primark | Cheap, (colours fades away) |
| 37. | Sensodyne | Gentle, mint content is not high |
| 38. | Sony | Reliability, quality |
| 39. | Star Bucks | Quality |
| 40. | Xia | Not conservative as German made |

# Appendix 6.2: Interview results – AM-associated brands

| | **Brand** | **Memory Event** | **Attributes** |
|---|---|---|---|
| 1. | Anchor | Used since childhood | The creamy taste, Healthy and strong |
| 2. | Nike | Playing with friends | Comfortable |
| 3. | CK | Overseas gift from uncle | Strong fragrance |
| 4. | Deso | Teenage shopping | Durability, Expensive |
| 5. | Reynolds | Best student in the class | Sharp point for nice handwriting |
| 6. | Samsung | Attending an overseas conference | Bright colours and clear pictures |
| 7. | Panasonic | Lived with an uncle who has musical instruments | Good sounds |
| 8. | Nike | Parents bought at the start of new school term | Expensive, popular, worldwide, sporty |
| 9. | Rod and Horror | Cleaning saddle after horse races | Distinctive smell |
| 10. | Avon | Birthday gift from fiancé | Strong smell |
| 11. | Rimmel | Used mum's make up in playing | Popular |
| 12. | Nestle | Favourite drink as a child | Tasty, many flavours |
| 13. | Designer bags | Birthday present from dad. | Good quality<br>Popular, Used by celebrities |
| 14. | Ferrari Limousine | Brother's wedding car | Posh |
| 15. | Heinz | Mum always bought | Better taste |
| 16. | Colgate | Family toothpaste influenced new generation | Re-assurance |
| 17. | Mercedes | Family car | High technology, Guarantee Reliability, Prestigious |
| 18. | Nike | Always bought brand | Comfortable, Guarantee, Reputation |
| 19. | Ribena | After school drink | Good, fruity taste |
| 20. | Heinz | Mum had it | Taste |
| 21. | Max Factor | Make up brand since teenager | Soft and mild |
| 22. | Colgate | Misled by the advert during | Good for gums |

| | | | |
|---|---|---|---|
| | | childhood | |
| 23. | Lucozade | Used to drink when poorly | Energetic |
| 24. | Nike | First birthday gift from wife | Durable Expensive |
| 25. | Waterstones | Trip to London in early childhood | Very good books for home work |
| 26. | Adidas | Winning the Rugby World cup | Look nice, Expensive |
| 27. | Nike | Playing Football for the school | Celebrity endorsement, Comfortable<br>Associate with winners |
| 28. | Sony | Birthday gift from dad | Hi-tech, Japanese made |
| 29. | CK perfume | Christmas Gift | Slim bottle, Easy to use, Nice fragrance |
| 30. | Hugo Boss | Birthday Gift | Soft and mild |
| 31. | John West | Always used by mum in cookery | |
| 32. | Raleigh bikes | Cycling with sister and friends | |
| 33. | Fanta | Summer holiday in Ireland | |
| 34. | Superman Character | Costume wore in the reception | |
| 35. | Sugar pops | Favourite as a child | |
| 36. | Lucozade | Best drink before the game | |
| 37. | Heinz soup | At grandmum's house | |
| 38. | Fray Bentos | Dinner with family | |

# Appendix 6.3: Interview results – Specificity

| | BRAM | BRAND | Quote | Specificity |
|---|---|---|---|---|
| 1. | Participating in horse races since small | Rod and Horror saddle soap | I had a pony back then and we used to use a special brand of saddle soap to clean the Saddle, 'Rod and Horror'. It is still going and that's associated with going to horse shows and competing. Smell of that product is quite distinctive. | Low |
| 2. | Company with an uncle who has musical instruments | Panasonic | I happened to have an uncle that I spent a lot of time with, when I passed secondary school and happened to go to the university, he had these musical instruments, they produced good sounds and you enjoy. I was tempted by that. The first musical instrument I bought was Panasonic and say if I want to go buying a musical instrument, I always go for Panasonic. | High |
| 3. | Playing with friends | Nike | With Nike track suits, jumpers and trainers, I remember playing football on a field near my house. I was probably five years old and since I left home like 17 18. | Moderate |
| 4. | Gift from uncle came from Canada | CK | I got one uncle who lives in Canada, and he once brought many gifts back home and I remember he gifted me a CK and this one was perfect. | Low |

| | | | | |
|---|---|---|---|---|
| 5. | Attending an overseas conference in Africa | Samsung | Once an advert had a really funny effect on me. You know I was in Africa, went for a conference, I was driving to the hotel from the airport. There was a big billboard, 'Samsung, Crystal Clear' This had a very good effect on me. It was presented in sky blue, Crystal. It was very simple. When I checked in to the hotel and the TV in my hotel room was Samsung, The pictures were coming very bright and nice. | High |
| 6. | Holiday in America | Nike | We went on a holiday to America when I was 11 years old, and lots of brands like Nike and stuff was a lot cheaper. I remember buying Nike trainers and t-shirts from America back home. | Low |
| 7. | Playing with friends | Rimmel | I remember another brand "Rimmel", in UK is a very strong brand, it's been here for many years. When I was about 14 years, myself, my sister and my best friends, sort of trying out make up. We used to play and all the time we used Rimmel. We were acting in some play or pretending to be models or in a photographic shoot. | High |
| 8. | Favourite drink in childhood | Nestle | Nestle, they use to make this product whereby you just pour. It is like hot chocolate sort of. I was addicted to it and I used to take it before going to school and coming back from school. I used to take it like four times per day. I was about 8 years and I've been following the brand ever since. | High |

| | | | | |
|---|---|---|---|---|
| 9. | Birthday gift for 18th Birthday | Designer | For my 18th birthday, I've got my first designer bag and ever since I've just been consistent with the whole designers brands; designer bags and designer watches and stuff like that. I think that's the way I was brought up with a higher social class or whatever. When I was young, I didn't know much about brands. When I was 18, and I was in college, a couple of people were obviously carrying designer bags and I got my first one, when I was 18.<br>You know with teenagers, and say when you are in a college you see peers carrying a designer brand and you are just carrying a normal brand, obviously in this kind of a society, everyone in the reference group sort of everyone belongs to , I just thought that put me on a upper scale of social class or something. | High |
| 10. | Travelling to London | Mercedes | I was in London and this was years and years ago. I was in the back seat of my dad's car, we were by the traffic light, it was red and I turned around. I saw two little girls in the car seat and I saw their mum driving, I was like, that was so nice and I want a big car because when young, if I was being given something with my sister, I wanted the biggest one. So Mercedes is my dream car. | High |
| 11. | Sister's wedding | Ferrari<br>Limousine | For my sister's wedding, we basically hired a Limousine, I can't remember the exact model, but I do remember that because it was nice. To be honest, I could remember myself, one or two others but not exactly everyone. | Moderate |

| | | | | |
|---|---|---|---|---|
| 12. | Brushing and seeking for the ring of confidence | Colgate | I was probably about 5 years. I can remember my sister finding me in the bathroom cleaning my teeth with Colgate toothpaste for the ring of confidence and I was upset that it didn't turn up. I was quite influenced by advertising when I was young. | Low |
| 13. | Holiday in Ireland | Fanta | I was at a holiday in Ireland. Fanta, about buying it from beach bar in Ireland and I was with my family. Because I suppose, it was a pretty safe environment that I had to walk on my own and I come back and drink it and then I had to walk back with the bottle and get money back for the bottle. | Moderate |
| 14. | Costume day in school | Superman | In school, like we had a costume day, and I had a superman costume for that moment. It was something that I loved during that time. | Moderate |
| 15. | Having the same brand as the family car | Mercedes | I was lot into Mercedes. At that time, Mercedes cars were actually pretty much in our family, my uncle did, my dad did and my grand dad did. I actually loved it so much. This has affected me a lot. And at that time, they were the best cars, first class cars, I mean in 1998, sort of technology they had at that time was absolutely amazing, They have improved it now. Really good cars. | High |
| 16. | B'day present for wife | Nike | My wife bought me as a B'day present, in 2004 August. It was Nike, Shoes wise, this is the first ever brand that I had. This was very comfortable. | Low |

| | | | | |
|---|---|---|---|---|
| 17. | Neglecting dad's advice | Lucozade | Lucozade, I can remember from being about the age of five, because my dad had told me, because it comes in a can, now it's in bottle, but dad has said to me, 'don't open it', I completely ignored him and opened it. It spilled all over everyone's clothes, its sweet sticky green, It made a hell of a mess. | High |
| 18. | Habit since a child | Ribena | Another important brand of my childhood would be Ribena, I was always used to have a small pack of Ribena. It's something that I wanted to drink, it's the sweet one Ribena, Even now, it's the one I like, Its always always, sweet one Ribena. | High |
| 19. | Lunch time at school | Heinz Baked | Heinz baked beans and Jacket potatoes at the time of college were the preference at lunch time. | Low |
| 20. | Having lunch at grand mum's house | Heinz soup | Heinz soup, when I used to go to my grand mums, they always have a lunchtime bowl of soup, with cheese and stuff, it's always Heinz. I think it is a psychological thing, it's a habit. | Moderate |
| 21. | Skin irritation while on a holiday | Body shop | The Body Shop is the brand that I buy all my makeup, purely because its' all high quality and organic and I've got a sensitive skin as well. Again, one year, when I was on holiday, my skin flamed, they've got a Body Shop at Gatwick airport and my mum bought me a nice foundation from there and it never affected my skin. | Moderate |
| 22. | Dinning with family | (Fray Bentos) | I remember Fray Bentos steak and kidney pies, because I've got two of my brothers and my dad, they really liked pies and chips for their dinner. Particularly can save because I remember my mum said, it's quite cheap to buy and we have got a family like five to feed and it was a quite good thing. I can remember having Fray Bentos Kidney | High |

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| | | | pies and I picked all these kidney beans, which was horrible, not something that I like. | |
| 23. | China tea set as a present | China tea set | I've still got it, I've got a beautiful China Tea set my husband bought from Spain, That's still in the cupboard, I've never used it. | Moderate |
| 24. | Having tea on Sundays | Fray Bentos Corned beef | When I was a child, we had that at home. My mum used to have it. It used to have a key to open it, but now it is the pull thing. We used to have Sandwiches with Fray Bentos every Sunday for a tea. We'd have dinner at 1 o'clock or something, and at 5'o'clock, mother makes sandwiches and bring it over. There were five of us then. After we have sandwiches, it's the Robinson Jam. | High |
| 25. | Always have when poorly | Lucozade | Oh yes, when I am not feeling good, or just got a cold or if you can't eat, I just drink Lucozade. I used to have it when my son was young, when he was poorly as a child, I gave him. | Low |
| 26. | Buying from own money | Nike | I remember the first time I bought a pair of Nike trainers because, before my mum used to buy them, she refused to buy them although I begged her. I started working at 15, and I bought a pair out of my own money, it was just come out that style of trainers and they were quite expensive, but they lasted me, they do last me a lot longer than cheaper brands do, and it was a lot better. | Moderate |

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| 27. | Waterstone's Saturday in London | Waterstones | I remember throughout my childhood, our trip every month. My dad used to take us to the Centre of London. It is an exciting trip to get on the tube and go to the Central London and go to Water stone's and we used go on a Saturday, spend the whole day in the city, spend the time to go to the Buckingham palace or not but we always used to go to Waterstones to get books. So that we could read and do our homes work. It can be any book, Maths, Science or English, whatever it was, that was the highlight. Every month we used to sit, it was me and my elder brother because my younger brother wasn't born then. We'd sit with the calendar, and decide which Saturday we would be going to Waterstones. | |
| 28. | Holiday in America | Nike | When I was younger, I went to America with my family and there was a quite a few shops over there that sold many brands like Nike and we all bought some Nike trainers. I think I was ten. I wear Nike as well. | Low |
| 29. | Winning the Rugby world cup | Adidas | I remember the Rugby world cup 2003, England won and they had the Adidas brand. I watched on the TV. Jonny Wilkinson had Addidas boots and he was the main player. | High |
| 30. | B'day gift from dad | Sony | I've got my play station Sony, I've got my first Sony play station years ago, when I was 7, It was Sony super station, I can still remember. | High |
| 31. | B'day gift from Aunt | CK | I was given a gift for my 18th B'day from my Aunt. Actually it's a really good, it's the fragrance, nice slim bottle and easy to use. | Low |

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| 32. | Watch as a gift | Gucci | I got this watch as a present actually, it's quite expensive its, Gucci, specially it has got diamonds in it as well. It's worth about £600 pounds. | Moderate |
| 33. | B'day gift from Brother | Hugo Boss | I can remember Hugo Bosh, I got from my brother, I remember the package of it, it was green, for a B'day, It's cool, mild fragrance, nice bottle. | Moderate |
| 34. | Saw making milk for younger sister | Nestle | When I am craving something sweet, I have it, that sort of feeling. When I want to munch something, and you know when you're sitting down and have something like a chocolate, you are watching Eastenders, I go and make my drink. When I want to put something on my belly, to make me full, I got to have my drink. | Moderate |

# Appendix 6.4: Interview results – Vividness

| | BRAM | Brand | Quote | Ability to imagine |
|---|---|---|---|---|
| 1. | Waterstone's Saturday in London | Waterstones | It used to be four of us, my parents, myself and my elder brother. We used to have a packed lunch for the day and definitely it involves Waterstones. Every month we used to sit, it was me and my elder brother because my younger brother wasn't born then, we'd sit with the calendar, and decide which Saturday we would be going to Waterstones. | Yes |
| 2. | Winning the Rugby world cup | Adidas | It was early in the morning. I had to get up at half nine, it was in Australia. We had some champagne actually. I can even remember having some bacon sandwiches as well. | Yes |
| 3. | Playing with friends | Rimmel | I can imagine sort of trying out make up, myself, my sister and my best friends. We used to play and all the time we used make up, when we were in acting some play or pretending to be models or in a photographic shoot. | Yes |
| 4. | Seeing mum making a drink to sister | Nestle | My mum was making a little sister a drink, the hot drink for her in her baby bottle, and I was like, or let me taste, how does it taste? Obviously it is different from what she gives us. I tasted the raw one without putting it to the milk and water. Oh my god, it was really tasty, then I made a whole jug and I drank it. | Yes |
| 5. | Birthday gift from Dad for 18th | Designer bag | It came through the post in the morning. He didn't handover to me because he was away. I got the delivery in the morning, I saw this big box, it was huge. I | Yes |

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| | Birthday | | was thinking what's in this and then I tried to open but I couldn't. I just took a knife and then I saw a bag, a designer bag. | |
| 6. | Brushing teeth and seeking for the ring of confidence | Colgate | I can also remember my sister finding me in the bathroom cleaning my teeth with Colgate toothpaste, for the ring of confidence and I was upset that it didn't turn up. | Yes |
| 7. | Neglecting dad's advice | Lucozade | My dad has said to me, 'don't open it. I completely ignored and opened it and it spilled all over everyone's clothes, it is sweet sticky green, It made a hell of a mess. | Yes |
| 8. | Dinning with family | Fray Bentos | at 5'o'clock, mother makes sandwiches and brings it over. There were five of us then. | Yes |
| 9. | Gift from an uncle came from Canada | CK | I really remember and can picture everything, how he gave it, and then I opened it. | Yes |
| 10. | Attending an overseas conference in Africa | Samsung | I can imagine the whole event. | Yes |
| 11. | Seeing a mum driving Range Rover while travelling to London | Range Rover | I was in the back seat of my dad's car and we were by the traffic light and it was red, and I turned around and I saw two little girl's in the car seat and I saw their mum driving. | Yes |
| 12. | Having the same | Mercedes | It sort of reminds me of those days. The driver used to come and pick us from | Yes |

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| | brand as the family car | | school. It was Vantage, blue colour car. | |
| 13. | Lunch time at school | Heinz | I can picture everything, there was a corner shop just down the road, there were really nice jacket potatoes and we used have it outside. | Yes |
| 14. | (Dinning with family) | Fray Bentos | I can imagine, Fray Bentos steak and kidney pies, because I've got two of my brothers and my dad, they really liked pies and chips for their dinner, I remember having Fray Bentos, and I picked all these kidney beans | Yes |
| 15. | Birthday gift from dad | Sony | I still remember I was quite young , and I got it from my dad (Santa) on a Christmas day. | Yes |
| 16. | Participating in horse races since a small child | Rod and Horror | Smell is quite distinctive | Yes |
| 17. | Costume day in school | Superman | I can still imagine how happy I was with this costume. | |
| 18. | Birthday gift from Aunt | CK | | Yes |
| 19. | First Birthday day present from wife | Nike | | Yes |
| 20. | Buying from own money | Nike | | Yes |
| 21. | Having lunch at grand mum's house | Heinz | | Yes |
| 22. | Skin irritation | Body Shop | | Yes |

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|---|---|---|---|
| | while on a holiday | | |
| 23. | Spending time with an uncle who has musical instruments | Panasonic | Yes |
| 24. | Playing football with friends | Nike | Yes |
| 25. | Hiring a Ferrari for sister's wedding | Ferrari Limousine | Yes |

# Appendix 6.5: Interview results – Affect

| | **BRAM** | **Brand** | **Quotes** | **Affect** |
|---|---|---|---|---|
| 1. | Waterstones Saturday in London | Waterstones | We loved Lady bird stuff, books from Waterstones. I have an emotional attachment with the shop because it reminds me my lovely childhood days' | Lovely<br>Emotional attachment |
| 2. | Winning the Rugby world cup | Adidas | It was so good, awesome. | Good<br>Awesome |
| 3. | Seeing mum making a drink to sister | Nestle | For me, when I am taking that brand, I feel like a baby. Just something, sweet, when I am craving something sweet, I have it, that sort of feeling. | Babyish feeling |
| 4. | Birthday gift from Dad for 18th birthday | Designer bag | I felt really good because you see celebrities carrying these designer bags and I just thought to myself, oh my god, I am normal person and I have a designer bag. I am on top of the world. Everyone see my designer bag. The feeling was good. | Good |
| 5. | Spending time with an uncle who has musical instruments | Panasonic | I enjoyed good sound of these instruments | Enjoy |
| 6. | Brushing teeth and seeking for the ring of confidence | Colgate | They are quite happy memories and very secure memories. | Happy |
| 7. | Dining with family | Fray Bentos | I feel happy when I remember. | Happy |
| 8. | Attending an overseas conference | Samsung | The pictures were coming very bright and nice. Can I | Spiritual |

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| | in Africa | | say these brands have a spiritual effect or an emotional effect. | Emotional |
| 9. | Seeing a mum driving Range Rover while travelling to London | Range Rover | I was like 'that was so nice'. | Nice |
| 10 | Hiring a Ferrari for sister's wedding | Ferrari Limousine | It was really nice. | Nice |
| 11 | Costume day in school | Superman | I absolutely loved that, and it was one of the happiest days I ever had in the school. I absolutely loved the whole concept. | Loved<br>Happiest |
| 12 | Having the same brand as the family car | Mercedes | I actually loved it so much. It was a very good car. It was a precious feeling and that was amazing, I absolutely loved it'. | Good<br>Love<br>Precious<br>Amazing |
| 13 | Dinning with family | (Fray Bentos) | Kidney beans are horrible, not something that I like. | Horrible<br>Did not like |
| 14 | Buying from own money | Nike | I found quite good that I bought them by myself by my own money, It did make me feel more happy and more comfortable. | Happy |
| 15 | First Birthday present from wife | Nike | I felt happy and that was it. Actually because, it was the first present from her, it was a happy moment. | Happy |
| 16 | Gift from an uncle came from Canada | CK | We loved his stuff from Canada | Loved |
| 17 | Birthday gift from Aunt | CK | It's really good and nice. | Nice |
| 18 | Shopping with boyfriend | Levis | I love Levis jeans | Love |

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| 19 | Receiving a wristwatch as a gift | Gucci | I really like it because its Gucci watches, mixed with happiness. Sometimes I really think of it, Oh I love my watch and I am so happy when I remember when I got it. It was so nice. | Happy<br>Love |
| 20 | Met with a car accident | Renault | I get frustrated when I do see that car, 'Oh this is the car who hit me' | Frustrated |
| 21 | Holiday in America | Nike | We enjoyed buying those stuff | Enjoy |
| 22 | Participating in horse races since a small child | Rod and Horror | Some races were exciting!! | Excite |
| 23 | Birthday gift from dad | Sony | I really liked it and I was very happy | Happy |
| 24 | Having lunch at grand mum's house | Heinz | I love this soup | Love |
| 25 | Skin irritation while on a holiday | Body shop | I am always with this brand, and proud of using it. | Proud |
| 26 | Lunch time at school | Heinz | Very enjoyable events | Enjoy |
| 27 | Playing with friends | Rimmel | Those memories are very enjoyable | Enjoy |
| 28 | Playing football with friends | Nike | Oh, I loved playing with them after school | Love |